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A
HANDBOOK
OF THE
ORGAN.

BY

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UNIVERSITY OF TORONTO

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PREFACE.

The aim of the present work is to provide organ students with a book of reference, supplementary to the organ method selected. It is also hoped that experienced players may find it useful for reference. So far as the author is aware, it is the only manual attempting to treat in a systematic manner all the subjects which are here summarised.

Part I deals with the organ historically, from the earliest known facts concerning it, down to our own period. Part II is devoted to a description of the mechanism, pipes, and different kinds of action found in modern organs. Part III treats of the technique of the instrument, with an indicated course of study to be supplemented at the teacher's discretion. Only a few specifications presenting features of special interest are given in Part IV, and the following section is a Glossary of terms used in connection with the organ by players or builders. In the Biographical section, forming Part VI, the notices, necessarily brief, may perhaps be useful to those who append notes to their recital programmes. The "Guide through Organ Literature" lays no claim to completeness, but it is believed that a sufficient number of the best original works and arrangements in different styles will be found included in the list.

The author's thanks are due to Mr. R. Hope Jones for permission to examine freely the new organ in Worcester Cathedral; for the drawings illustrating his electric action and the Diaphone; also for much interesting and valuable information; — to Mr. T. Casson for particulars concerning his latest ideas in organ construction, and for an account of the very ingenious little "Positive" organs, which should prove a boon to many village churches; to Mr. J. Binns for an illustration of his Tubular Pneumatic action, and to Mr. T. Austin for a description of a new departure in organ building in America.

As the organ possesses greater latent possibilities of development and improvement than any other musical instrument, the author will be glad to receive from builders an account of any important inventions for mention in future editions of this manual, should it be so fortunate.

GUERNSEY, 1897.

John Matthews.

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PART I.

Historical.

Early History of the Organ.

The earliest reference to musical instruments in the Bible is to be found in Genesis, Chap. iv, v. 21, the harp ("Kinnor") and organ ("Ugab") being simultaneously mentioned, so that it is doubtful whether plectral or wind instruments can claim precedence in point of antiquity. The "Ugab" consisted of a few tubes — probably from some aquatic plant of the reed species — bound together. Man having observed that the musical sounds obtainable from these primitive flutes varied with the length, the next step would be to arrange them in symmetrical order, the result being a graduated series of sounds, or scale. This mouth organ of seven, eight or nine notes, known as "Pan's pipes", was the "Syrinx" of the Greeks, and the "Fistula" of the Romans.

As shifting the pipes to and fro across the player's lips proved tiring and inconvenient, the wind was sometimes supplied by blowing into tubes which opened out into a wooden box (wind chest), holes being bored in it to receive the feet of the pipes. A monument in the museum at Arles, dated xx. M. viii shows in sculpture two figures holding these tubes, which here supply wind to nine small pipes bound together in symmetrical order. As the pipes would otherwise all sound together, the player's fingers

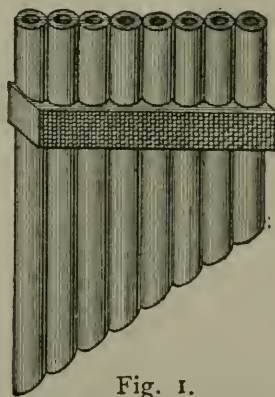


Fig. 1.

Pan's pipes, or Syrinx.

had to stop those that were not wanted. In Kircher's "Musurgia" the next important advance is shown. A piece of wood (slide) with a hole bored in it was placed against the bottom of each pipe, to be drawn in or out at will, the pipe sounding only when the wind could pass into it through the aperture in the slide. Mouth blowing also is superseded in the accompanying illustration (said to be that of

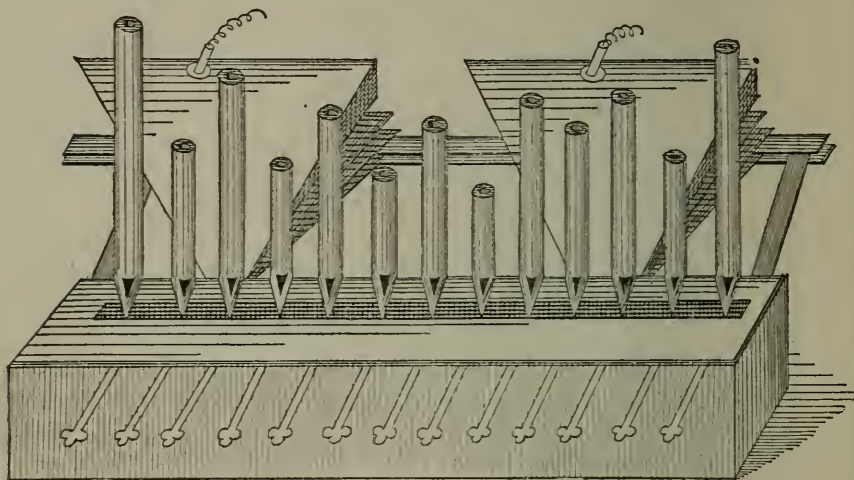


Fig. 2.

From Kircher's *Musurgia*.

the instrument known to the Hebrews as the Magrepha), by two triangular bellows on the principle of the common house bellows. In the hydraulic organ, — an invention of Ctesibus, an Egyptian, three centuries before Christ, and of which examples were occasionally made as late as 826 A. D., — water was ingeniously used to equalise the wind pressure. The pneumatic, or wind organ, in which no water was used, superseded it.

Use of the Organ in Church.

Julianus, a Spanish bishop (450 A. D.), says that organs were then in common use in Spanish churches, though for many centuries later it was regarded as a profane instrument by the Roman and Greek priests. The Greek Church still prohibits all instrumental music in its services. An organ which existed at Grado, in a church of the nuns, before 580, is described as being about 2 ft. long

and 6 inches broad, possessing fifteen playing slides and thirty pipes — two pipes to each note.

In the 7th century, Pope Vitalian at Rome introduced the organ to assist congregational singing, and its use soon spread to France and England. Aldhelm (circa 700) says that the Anglo-Saxons ornamented the front pipes with gilding. In 757, Pepin, father of Charlemagne, obtained a pneumatic organ with lead pipes for the church of St. Cornelius at Compiègne, — a present from the Byzantine Emperor Constantine Copronymus the 6th. In Germany (811 or 812) Charles the Great had a copy of this organ made for Aix-la-Chapelle, which town is credited with possessing two other organs about this period, — a hydraulic organ made in Venice by a monk named Georgius in 822 for the Palace of Lewis the Pious, and a pneumatic organ “of soft tone” by Giafar, an Arabian, sent to Charlemagne by the Caliph Haroun Alraschid.

Ancient English Organs.

By the 9th century several organs existed in English churches, the pipes being made of copper or brass. An MS. Psalter of Edwin, (preserved in the library of Trinity College, Cambridge) contains a curious illustration of an early English church organ. There are four blowers, and the two players seated in front are rating them soundly for letting the wind out, or for unsteady blowing. This is the first instance known to us in which long handles supply the leverage required to work the bellows. The organs of this period had only from one to two octaves of pipes of the Open Diapason kind, tuned to the C major scale, from tenor C upward.

In the 10th century we read of several organs of English make, — by St. Dunstan (925—988) for Malmesbury Abbey, another, a present from him to Abingdon Abbey, and of a most remarkable one in Winchester Cathedral, built by order of Bishop Elphege and curiously described in Latin verse by the monk Wulston, thus translated in Wackerbarth’s “Music and the Anglo-Saxons”: —

“Such organs as you have built are seen nowhere, fabricated on a double ground. Twice six bellows above are ranged in a row, and fourteen lie below. These, by alternate blasts, supply an immense quantity of wind, and

are worked by seventy strong men, labouring with their arms, covered with perspiration, each inciting his companions to drive the wind up with all his strength, that the full-bosomed box may speak with its four hundred pipes which the hand of the organist governs. Some when closed he opens, others when open he closes, as the individual nature of the varied sound requires. Two brethren (religious) of concordant spirit sit at the instrument, and each manages his own alphabet. There are, more over, hidden holes in the forty tongues, and each has ten (pipes) in their due order. Some are conducted hither others thither, each preserving the proper point (or situation) for its own note. They strike the seven differences of joyous sounds, adding the music of the lyric semitone. Like thunder the iron tones batter the ear, so that it may receive no sound but that alone. To such an amount does it reverberate, echoing in every direction, that everyone stops with his hand his gaping ears, being in no wise able to draw near and bear the sound, which so many combinations produce. The music is heard throughout the town, and the flying fame thereof is gone out over the whole country."

It has been conjectured that the "seventy blowers" is a textual corruption for seven, and that the "alphabet" refers to the handle of the rods or levers which controlled the wind supply to the pipes by moving a slide, the ten pipes to each note sounding together as one huge mixture.

The First Keys.

In the 11th century, Theophilus, a monk, left a treatise minutely describing the construction of the organ, but with no mention of a keyboard. The first authentic account of a keyboard is that of an organ at Magdeburg (built towards the end of the 11th century), with 16 keys, each an ell long and 3 inches broad. Dom Bedos alludes to organs with keys 5 to 6 inches wide. The mechanism being stiff and clumsy, these were pressed down singly by the fist, and the players were known as "organ beaters". The Magdeburg organ keys were shaped as in Fig. 3 (each being lettered) with short keys between, similarly placed to the black keys of our modern keyboard. Fig. 4 represents the shape found in other ancient organs. In

the 14th century the keys became increased to as many as 31 (from the 2nd line bass clef to the 5th line treble

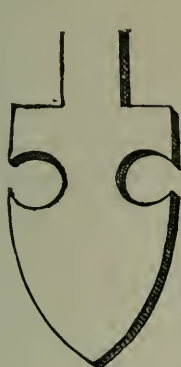


Fig. 3.

Ancient Keys, 11th or 12th Century.



Fig. 4.

clef), lessened in width, and the mechanism so far improved that they might be played by the fingers instead of the fist. A second keyboard was added; the upper manual commonly forming the treble, and the lower the bass.

Invention of Pedals.

Pedals, according to some German authors were invented in 1300 by L. van Valbeke of Brabant. Bernhard, a German introduced them into Venice in 1445 and probably made some improvements which have associated his name with the invention, but they are known to have formed part of an old organ at Beeskow, near Frankfort on Oder, dated 1418. And in France, Amiens Cathedral possessed a 3 manual organ of 40 stops (seven of which were pedal stops), built in 1429.

Development of the organ in Germany and France.

The earliest known name in the annals of German organ building is that of Albert van Os, who erected an organ in St. Nicholas Church, Utrecht in 1120. The German churches soon became renowned for the size and power of their organs, the pedal department receiving special attention. As improvements in the mechanism permitted, sets of pipes were made to be drawn singly,

and variety of tone-color was aimed at, notably in Germany by the introduction of narrow scale stops of the Gamba class. Distinctive names were applied to the stops in the 15th century, and reed stops were added. The French organs became noted for the variety and excellence of their reed stops and solo stops generally. Whilst power was chiefly required in the German organs to support the massive unisonal singing of the congregation in familiar chorales, the elaborate ritual of the Romish church in France was an important factor in directing the efforts of her builders towards providing solo stops of characteristic quality for its enrichment. As early as 1516 or 1518 St. Mary's Church at Lubeck contained a large organ of 2 manuals (a 3rd manual being added in 1560—1561) with a 32^{ft} front of finest English tin. In 1576 an organ erected at Bremen in Brandenburg had a manual compass of 48 notes, with 60 stops, 16 being pedal stops.*

Pretorius gives a specification of a 3 manual instrument of 55 speaking stops built in 1585 by Julio Antonio, and erected in St. Mary's Church Dantsic. It had a 32^{ft} stop on the pedals, and a "trummel" (drum); also 3 Tremulants.

German authors assign an honourable place in the history of organ building to Isaac Compenius of Brunswick. In 1615 he erected a large 3 manual organ of 48 stops, with 16 pedal stops at Bückeburg. Two other organs, — at Fredericksborg near Copenhagen, and at Halle in the church of St. Maurice, — were of large size. In 1616 he built an organ in which all the pipes were of wood.** The latter had sound boards slanting downwards toward the front.

Eugenio Casparini built a small organ for Vienna, with 6 stops the pipes of which were made of paper. The Abbe Schnittker, towards the close of the 17th century built two large organs for St. Jacobi, and St. Nicholas Hamburg, of 60 and 67 speaking stops respectively. Sebastian Bach endeavoured to obtain the organistship of St. Jacobi, in 1721, attracted by this large and fine organ,

* This organ is attributed to M. Bartold N. Hering. By 1705, when Bach made his memorable journey of 50 miles on foot to hear Buxtehude play it, it had become enlarged to 50 stops.

** During the present century a few organs have been built in which all the pipes are of metal.

but his claims were set aside in favour of a clerical amateur who had bribed the authorities.

Seidel* enumerates some quaint absurdities introduced by some of the old builders into their organ cases:

"In the course of the 17th and in the beginning of the 18th centuries great care was bestowed on, and money expended for the external embellishment of the organ. The whole case was ornamented with statues, heads of angels, vases, foliage and even figures of animals. Sometimes the front pipes were gilded, silvered, or painted. The lips of the pipes were changed into lion-jaws, or some other figures were driven into the pipes. To this paltry sort of artifice we should not object so much, the less so, as in the course of time it was abolished as being useless and unsuitable. But people went farther, and threw away the money which might have been expended in a worthier manner, for the most insipid and absurd ornaments, degrading thereby — unknowingly perhaps — this sublime instrument to a raree-show. Among these ornaments the *figures of angels* played a very conspicuous part. Trumpets were placed in their hands, which, by some contrivance, they could move to or from their mouths. Carillons (chimes) too, and kettle-drums were handled by these angels. Not unfrequently there was in the midst of this heavenly host some bigger angel, soaring above the others in an artificial sea, and beating with his baton the time for his super-earthly orchestra. Under such circumstances the firmament could not be dispensed with. There were running suns and moons and moving jingling stars (called cymbal stars). Even the host of the animal kingdom was summoned. Songs of nightingales, cries of the cuckoo, etc. adorned the celebration of holy Christmas, and proclaimed to the Christian assembly the birth of the Redeemer. Eagles flapped their wings, or flew towards an artificial sun: The crown, however, of all these absurdities was the *fox-tail*. It was intended to frighten away from the organ all those curious and inquisitive persons, who, by thronging themselves round it often disturbed the organist. Thus, when they pulled out this stop, suddenly a large fox-tail flew into their faces! It is clear that

* "The Organ and its Construction by J. J. Seidel, Organist at Breslau", 1844.

by such absurd wit, curiosity was much rather excited than stopped, and that all this host of moveable figures and their ridiculous jingling disturbed meditation, excited the curiosity of the congregation, and thus disparaged the sublimity of Divine service. Another absurd and even pernicious contrivance is the *tremulando*, a register which, on funeral services, fastdays, and on Good Friday, was to indicate the sobbing, sighing and trembling of men."

Yet though money was undoubtedly thus wasted, these eccentricities were mostly added to large instruments containing all the more legitimate resources that organ building skill had then arrived at. They did not starve the pedal organ for the sake of a few fancy stops, with a Swell or Great out of all proportion, thereby robbing the instrument of all dignity and impressiveness; nor did they spread a small number of stops, insufficient for a two manual, over three. The two manual organs built from 50 to 100 years ago, of which Seidel gives so many specifications, showing from 12 to 14 stops on the Great, 10 or 12 on the Pedal, and a similar number on the Choir, present a startling contrast to English organs of the same period, a very common type being a Great of 10 to 12 stops, a similar number on the Swell and only 2 on the Pedals.

Amongst German builders of the last century the Silbermann family claims special mention. Andreas built 29 organs (seven of which were erected in the churches of Strassburg) between the years 1707 and 1733; his brother Gottfried built some fine instruments in Dresden, and the two sons of Andreas worthily maintained the family reputation down to the middle of the last century. A powerful pedal organ, excellent diapasons and other foundation stops of the Gamba class, brilliant mixtures and a solidity of workmanship which has well stood the test of time, were the chief characteristics of their organs. The reeds, however, were often crazy and "buzzing" to a degree, and the amount of mixture work — as in all the old organs when played "full" — excessive to modern ears. The divided pallet and pneumatic action being as yet unknown, a light wind pressure was necessary to render playable a large number of stops at a time, whilst reeds are most effective on a heavier wind. The French builders, by making the pallets smaller and maintaining a good wind pressure, were enabled to excel in the production of cha-

racteristic solo stops, but at the expense of power, a large organ being only available, so to speak, in sections at a time.

In Italy, Hermann, a Jesuit, built some fine organs in the 17th century, and amongst other large and celebrated instruments of the last century must be mentioned Christian Müller's organ at Haarlem (1735—1738) of 60 speaking stops, Gabler's for the Benedictine Monastery, Weingarten, (1750) containing 4 manuals, and 70 speaking stops, 17 of which are on the pedal with a 32^{ft} front of fine tin; and Hildebrand's (Silbermann's foreman) great organ of 70 stops in St. Michael's church in Hamburg, said to be a model for convenience of access to every pipe.

The Abbé Vogler, son of a violin maker, (b, 1749, d, 1814), an eccentric but gifted theorist, player and composer, introduced many reforms of more or less value into the organs of his time. These were: —

1. The use of free reeds.
2. The suppression of many of the mixture ranks.
3. Arrangement of the pipes in semitonal order (the "Simplification system" since followed by Schulze and Kirtland and Jardine).
4. Substitution of pedal Quints for 32 foot stops.

J. Gottlob Töpfer, of Weimar (b. 1791, d. 1870) should also here be mentioned. His "Theory and Practice of Organ Building" as revised in 1888 by Max Allihn is the standard work in Germany on organ construction.

E. F. Walcker & Son of Ludwigsburg and J. F. Schulze & Sons of Paulinzelle considerably advanced the art of organ building in Germany during the present century. The former made a name through the large organs at St. Paul's, Frankfort on the Main, 74 speaking stops, 3 manuals and divided pedal organ, built in 1833; Ulm Cathedral, 4 manuals, 100 speaking stops, including 31 on the pedals, with a crescendo and decrescendo arrangement worked by a wheel, drawing every stop; built in 1856, rebuilt in 1887—1888; the Music Hall, Boston, U. S. A. built in 1863; the Dom at Riga in 1882—1883, 4 manuals with 124 speaking stops and about 50 couplers, composition pedals and other accessories, the New Gewandhaus, Leipsic, built in 1884, 54 speaking stops and 22 accessory movements, and many others.

J. F. Schulze (b. 1793, d. 1858) founded the firm of Schulze & Sons, in Paulinzelle. In 1851 they sent an organ

to the Hyde Park Exhibition, which won a prize medal and was afterwards placed in Nottingham Town Hall. About a dozen organs were erected by them in England, including the large instruments at St. Bartholomew's near Leeds, and Doncaster Parish Church, the latter (completed in 1862), having 5 manuals and a pedal organ of 25 stops. Schulze's system of voicing found some followers in England. The flue pipes were copiously winded through unusually large openings at the feet, the mouths being cut up proportionately high. Their string-toned stops were also of characteristic quality, but slow in speech.

Fr. Ladegast of Weissenfels, W. Sauer & Sons of Frankfort, and Schlag & Sons of Schweidnitz, Silesia, are also names of repute in Germany. The organs in the Dom at Schwerin (built in 1871) and the Nikolas-Kirche Leipsic (built in 1862) are by Ladegast, the organs in the Dom at Fulda (built in 1877) and the Petrikirche, Leipsic (built in 1884) are by Sauer, and a representative specimen of the work of Schlag & Sons will be found amongst the specifications in Part IV.

Mons. Ch. Anneessens of Grammont, Belgium should also be mentioned here as being one of the few foreign builders who have built organs for this country, the first being the large 4 manual instrument in the Italian Church, Hatton Garden, which became the subject of interesting comparisons.

The reluctance of German builders to accept so important a feature as the Swell is a very curious fact in the history of organ building. We find the pianist, Hans von Bülow, writing in 1877 with reference to the organ in the Public Hall, Glasgow, "Hearing the diminuendi and crescendi was to me a new sensation." For a long time, even in large modern German organs only the Vox Humana, Oboe and one or two flue stops were placed within a Swell box, and even so late as 1890 a distinguished German author alludes to the organ crescendo as being "produced from *one or two* soft stops enclosed in a box with movable shutter", and deprecating such a crescendo as that produced by an orchestra, "as it would rob the organ tone of its majestic passionlessness, and tend to a sentimental or pathetic mode of playing". Yet for half a century or more before those words were written, English builders aimed at producing, even in ordinary two manual

organs, so far as funds would permit, a "complete" Swell with reeds, mixture and a double. The German ideal was an instrument upon which Bach's organ works could be played with dignity and impressiveness, even on two manuals; the English, an *expressive* organ with complete Swell; and the usual chancel position or chamber furnished by architects also greatly hindered the development, in churches, of the pedal organ. Some of the foremost German organists, such as Merkel and Haupt were fully alive to the importance of the Swell, but were never, apparently, in a position to have this improvement effected with regard to the organs upon which they played. Within the last ten years or so the Swell department has developed in German organs, and the large and powerful instruments of the old builders are gradually being modernised and furnished with composition pedals and pistons.

Organ building as practised in France had new paths opened up for it, through the great abilities of Cavallé-Coll. He applied separate wind chests to the upper, lower and middle parts of the manual compass, and introduced the harmonic stops produced by overblowing. Amongst his most effective organs may be mentioned those at La Madeleine, Paris, 4 manuals, 48 stops, built in 1846; St. Sulpice, Paris, 5 manuals, 100 stops, rebuilt 1862; St. Vincent de Paul, Paris, Palace of Industry, Amsterdam, etc. An organ of 24 stops was erected by him in Paisley Abbey, in 1874, and the concert organs in the Town Halls of Manchester and Sheffield are also by him. Daublaine & Callinet were established in Paris in 1838. Danjon, organist of Notre Dame, who had studied the art of organ building in other lands with the object of improving French organs, was associated with this firm, which in 1845 became Ducroquet et Cie. At the Exhibition of 1851 in Hyde Park, an interesting organ of theirs was on view. In 1855 the business again changed hands, becoming Merklin, Schütze et Cie. Joseph Merklin was the son of a German organ builder at Freiburg, worked with Walker of Ludwigsburg, settled in Brussels in 1843 and with his brother-in-law as partner maintained a large factory there in addition to the one acquired from Ducroquet et Cie. The organs at St. Eustache, Paris, the Cathedral, Murcia, and a large number of organs throughout France and Belgium are the work of this firm.

Organ building in England.

The first English builder whose name has been preserved to us is that of John Roose, a Friar, who according to the Fabrick Rolls of York Minster, repaired the organ in 1457 at a cost of 36s. & 8d. The Precentor's accounts of Ely Cathedral for 1407 give in Latin, minute details of prices of materials for an organ which cost £3-17-8, but without mentioning its maker. In 1450, St. Albans possessed a "pair of organs", regarded as the finest in size, tone and workmanship of all the English monastic instruments, — a present from the Abbot, its cost being £50. Organs with two rows of keys were described as "double organs"; the term "pair of organs" in old records being merely used in the same way as we still speak of a "pair of bellows" or a "pair of stairs". A small "pair of organs" with just one small row of pipes, capable of being carried in procession, (and so used in Roman Catholic countries) was termed a "regal", or "portative", whilst the instrument of fuller compass, fixed and played with both hands, was called "positif". Used to accompany the voices of the choir, it is the forerunner of our "choir" organ.

Antony Duddyngton "citezen of London" contracted to make, in 1519 an organ for All Hallows Barking, "of double Ce-fa-ut that ys to say, xxvij playne keys, and the pryncipale to contayn the length of v foote, so folowing wt Bassys called Diapason to the same, conteyning length of x foot or more: and to be double pryncipalls thoro-we out the said instrument, so that the pyppes wt inforth shall be as fyne metall and stuff as the ytter parts, that is to say of pure Tyn, wt as fewe stops as may be convenient." As keys with many sharps or flats were never used in organ playing until a very much later period, it became the practice to make the lowest octave a "short octave" by omitting bass notes seldom required in the church music of the times, and substituting others. Thus beginning with EE the arrangement would be: —

Keys EE, FF, FF♯, G, G♯, A, B♭, B, C.

Actual sounds CC, FF, DD, G, EE, A, B♭, B, C.

"When the lowest octave was made complete" says Dr. E. J. Hopkins, "the EE♭ note was present: DD occupied its correct position; and the CC♯ key sounded AA...A key

was sometimes added beyond CC, sounding GG, which converted the compass into GG, short octaves."

During the civil war and the Puritan ascendancy many cathedral organs were wantonly destroyed, and English builders had to seek other employment. At the Restoration, the Dallams, John Loosemore, (whose organ in Exeter Cathedral, built in 1665 had a great reputation) and one or two other native workmen were still left. Ralph Dallam, in an organ of one manual which he built about 1661 for St. George's, Windsor, introduced an ingenious arrangement for reducing the stops by means of two "shifting" movements actuated by a pedal. Bernard Schmidt (Father Smith) and his two nephews were induced to come over from Germany, and in 1660 they erected their first instrument in the Royal Chapel, Whitehall. Dr. Rimbault enumerates 45 of Father Smith's organs; — Westminster Abbey, 1660; St. Margaret's, Westminster, 1675; Temple Church, 1683—1684, St. Paul's Cathedral, 1694—1697, St. Georges Chapel, Windsor, Wells, Durham, Ripon, Chester, St. David's and Manchester Cathedrals and several of the churches and college chapels of Oxford and Cambridge.

Renatus Harris, who came from France with his father (an Englishman settled in France) became Smith's principal rival, erecting organs in several London churches, and in the following Cathedrals — Salisbury, Gloucester, Worcester, Chichester, Winchester, Bristol, Hereford, Ely, Norwich, Cork and St. Patrick's Dublin. He competed with Smith, at the Temple Church, by the request of the Benchers, each erecting an organ in that church, in 1684. Upon Harris challenging Smith to make additional stops, the contest became protracted for three years before the decision was finally given in favour of Smith. Harris's organ subsequently formed part of the instruments he built for St. Andrews, Holborn, and Christ Church Cathedral, Dublin. Dr. E. J. Hopkins thus describes the Temple Church organ as left by the builder in 1688: —

"Smith's organ reached in the Bass to FFF; and from FF upwards it had two additional keys or "quarter notes" in each octave, "which rarities" according to an old book preserved in the Library of the Inner Temple, "no other organ in England hath; and can play any tune, as for instance ye tune of ye 119th Psalm (in E minor) and severall other services set by excellent musicians; which

no other organ will do". The order of the keys ran thus: FFF, GG, AA, BB \flat , BB \sharp , then semitones to gamut G, after which the two special quarter tones in each octave; the compass ending on C in alt, the number of keys on each manual being sixty one. The keys for the two extra notes (A \flat and D \sharp) were provided by those for G \sharp and E \flat being cut across midway; the back halves, which acted on the additional pipes rising as much above the front halves as the latter did above the long keys."

There were 3 complete manuals, but the absence of a pedal organ in the specification shows that at that period we were far behind our German neighbours in real organ playing. And until well within the present century, an octave and a half or two octaves of open Diapason pedal pipes not infrequently formed the sole pedal bass of large English organs. Later, however, as we shall see, the mechanical ingenuity of English and American builders has enriched the resources of the organ with important improvements which our continental neighbours have in turn copied.

The old manual compass to GG of English organs was for a long period a hindrance to the proper development of the pedal. By reducing it to CC, as in the German and French instruments, much of the expense and space thus saved could be better applied to the pedal, but it was not until the end of the last century that pedals began to be made in England, sometimes of CCC compass, and sometimes adapted to the old GG or FF range. Of other builders who worked at their craft in England, must be mentioned Christopher Schrider, who built the Westminster Abbey organ in 1730; Thomas Schwarbrook, who, in a fine organ for St. Michael's Coventry, built in 1733 at a cost of £1400 attempted to combine strings with the organ, in three stops, *harp*, *lute* and *dulcimer*; Richard Bridge and John Byfield, who afterwards became partners with Jordan; Parker, employed by Handel to build the organ for the Foundling Hospital in 1749; John Snetzler, whose Double Diapason and Dulciana at Lynn Regis, 1754, were the first examples introduced into this country; and Samuel Green who supplied many of our Cathedrals about 1780 to 1790 with organs noted for their delicacy and sweetness of tone. John Avery, Crang & Hancock, and the Englands, father and son also date from the latter half of the 18th century.

Invention of the Swell.

In 1712 the swell was invented by Abraham Jordan and first placed by the firm in their organ at St. Magnus, London Bridge. In principle it was like a window sash, instead of the "venetian blind" pattern of later date. This invention, so necessary for expressive playing was appreciated earlier in France than in Germany, where it is only beginning to be generally introduced; the first small and imperfect attempt being made, it is believed in the latter country by Hildebrand at Hamburg, — half a century after its invention, — three stops only being put into the box. The Jordans also initiated the "reversed keyboard" arrangements, — the player facing the choir or congregation.

Improved Bellows and Composition Pedals.

In 1762 Cummings, a watchmaker, advocated making the bellows horizontal instead of diagonal, inverting the folds so that whilst one opened outward, the other opened inward, thus helping to steady the wind. See Fig. 12, p. 39.

For a long period organists had to be content with little or no facilities, even in the largest instruments, for changing the stops instantaneously in groups by a single movement. On the continent, the ventil system (which cut off the wind supply from a group of stops by the action of a single pedal or stop) was preferred, whilst in England the "shifting" movement of Dallam was improved on in 1809 by J. C. Bishop's Composition pedals, acting upon the stop handles themselves.

Pneumatic and Electric Actions.

Mr. Joseph Booth in 1827 built an organ for Attercliffe Church, Sheffield, in which he placed the bass of the Open Diapason on a soundboard of its own, with a small circular bellows, termed a "puff" fixed to each pallet. Conveyances from the Great organ soundboard conducted wind to each bellows which, as it opened downwards-brought with it the pallet. From this beginning, the tubular pneumatic system so much favoured by contemporary builders, has been developed, with important improvements, which cannot be described here. (See Part. II.)

In 1832 Mr. C. S. Barker invented the "Pneumatic lever" for overcoming the resistance offered to the finger

by the wind pressure when a large number of stops were used. He placed a small bellows under each key and through the agency of compressed air was enabled to adjust the touch to any desired elasticity, — a matter of great importance to technical execution, as many large organs required when played “full” a finger pressure upon each key reckoned not in ounces but in pounds. English builders having declined the invention, Mr. Barker offered it to the Parisian builder, Mons. Cavaillé Coll, who first applied it to the organ he built in 1841 at St. Denis. Profiting by Mr. Barker’s ingenious invention, Mr. Henry Willis introduced the little knobs known as combination pistons, projecting between the key slips, to control the stops in groups merely by a slight touch from a disengaged finger or thumb.

Dr. Gauntlett, foreseeing the possibilities of electricity in connection with organ building proposed to apply it to all the organs at the Great Exhibition of 1851 that they might be played simultaneously from one console, but the idea was not entertained. Patents were taken out by him a year later, and by Mr. Goundry in 1863, but were not turned to practical account. Mr. Barker (St. Augustin’s Paris, 1867), Mr. Bryceson, 1868, and Mr. Henry Willis in the same year, by their inventions brought the electric action to the front, and electricity has since been successfully used also as a motive power in blowing.

English Builders and Inventors of the Present Century and some of their principal Organs.

Until nearly the middle of the present century, we had scarcely an organ that could compare in power and completeness with those which the Silbermanns and one or two other German builders had erected long before in continental churches. The Diapasons of some of the old English organs of Green and others, had, however, a certain musical quality and charm of their own. The Gamba class of stops was not represented; manual doubles were seldom met with, and against an Open and Stopped Diapason an excess of mixture work was built up on the Great organ, its reeds being represented solely by Trumpet & Clarion, and when pedals were added, a single set of pedal pipes — an open Diapason — had to do duty for all purposes. But the last fifty years have witnessed

a remarkable development in the art of organ building in England. We can only briefly mention the builders who have taken part in it.

Elliot & Hill's business was acquired from Snetzler's foreman, Ohrmann. To Mr. W. Hill, backed by the strenuous advocacy of Dr. Gauntlett, is mainly due the introduction of the CC compass into England. Amongst the larger organs of this firm are those in York Minster (built after the fire of 1829 at a cost of £5000), containing 80 stops, and then considered the largest organ in the world; Birmingham Town Hall, Westminster Abbey (see Part IV); Sydney Town Hall, 5 manuals, 126 speaking stops, 14 couplers, and 48 combination studs and pedals, opened in 1890, the first organ to contain a 64 foot stop (see Glossary, "Contra Trombone"); the Queen's Hall, Langham Place, London (1893) and many other fine instruments of brilliant tone.

James C. Bishop founded the house of Bishop & Sons towards the end of the last century; they introduced the Clarabella stop, concussion bellows and composition pedals. Brompton Oratory, St. James' Piccadilly, St. Mary's Church, Nottingham, and Bombay Town Hall contain specimens of their work.

Gray & Davison's firm dates from 1774; in 1876 they acquired Robson's business. The large organ in the Crystal Palace, (built in 1857, rebuilt 1882) is by them, and in their *magnum opus* in Leeds Town Hall (1859) Henry Smart's genius for construction made itself apparent.

B. Flight's organ building career dates also from the end of the last century. He invented some mechanical improvements, including a contrivance for steadying the wind. In 1800 J. Robson became a partner. They built the "Apollonicon" (see Glossary) and Mr. Robson improved on the old "Tumbler" coupler, inventing one similar in principle to the "drum head" (Fig. 14) which he called the "ram" coupler.

Mr. Henry Willis exhibited, at the Exhibitions of 1851 and 1862 organs which were greatly admired. His many large Cathedral and concert organs became noted for the excellence of their mechanical arrangements and fine reeds. Mention may here be made of those in St. Georges Hall, Liverpool (1855, rebuilt 1867); Albert Hall, London (1871, see Part IV); St. Paul's (1872); Salisbury (1877); Canter-

bury (1886); Truro (1888); Exeter (1891); Hereford and many other Cathedrals.

One of the first English builders to take up and improve on Barker's electric action was Mr. Bryceson, who patented in 1868 a new form of pallet, acted upon directly by the electro-magnet, without the intervention of the pneumatic lever, and offering no resistance in opening. It was first applied to the organ in Drury Lane Theatre. Other organs by this builder are the large one built for Mr. N. J. Holmes, Primrose Hill, London (afterwards erected in the Albert Hall, Battersea, and purchased in 1896 by the Benedictines, Fort Augustus, Scotland); St. James' Hall, and S. S. Peter & Paul's R. C. Church, Cork (1876). In this last organ the reeds were put in the Swell box, and each manual soundboard was divided and supplied with separate reservoirs for treble and bass.

Messrs Joseph Walker & Sons date from about 1819. Out of a large number of organs of excellent quality of tone built by them should be mentioned the large 4 manual organs in Holy Trinity Church, Sloane Street, London (1891); St. Matthew's, Northampton (1895), 54 speaking stops, 11 couplers, 16 combination pistons and pedals, with adjustable combination action.

Mr. T. C. Lewis opened an organ factory in London about 1861. His organs quickly became noted for their structural excellence, a feature largely due, no doubt, to his early training as an architect. St. Andrew's Hall, Glasgow (1877); Ripon Cathedral, and Southwark Cathedral (1897) contain fine examples of his work.

In 1882 Mr. T. Casson, a Banker of Denbigh, advocated certain reforms, more particularly in the provision of an adequate and sympathetic pedal organ and the control of that department and its couplers. These improvements were successfully carried out with the approval of eminent organists in several fine instruments, as e. g. St. Barnabas, Pimlico, and St. Paul's, Lozells nr. Birmingham. Mr. Casson's methods are at present embodied in the following rules: —

Stops must be provided on the pedal organ suitable for every manual organ.

Pedal stops for the Swell must be in the Swell box.

For purposes of control, all couplers must be regarded, located, and be acted upon by the combination movements.

To control the pedal stops and couplers, a bar is placed at the back of each manual, on touching which the pedal stops and couplers are moved outwardly as well as inwardly — into the exact combination required to form a bass for the combination of stops and couplers then extant on its manual, *continuing to do so through all changes until the bar of another manual is touched*, yet not interfering with the power of the organist to manipulate the stops and couplers himself. This novel movement, termed a "Pedal Help" supersedes the "Pedalier" system applied to the organs named. Two other remarkable inventions of Mr. Casson are: —

Octave Duplication. In this there is provided for every principal stop-group a secondary group of stops and couplers selected from the primary group. Those in the secondary group come into action by cancelling — without externally moving — the primary group and vice versâ. The secondary group comes into operation however, *with the octave action only*, for which the soundboard is prolonged an extra top 8^{ve}; the normal or 8^{ft} action being thrown out of gear, so that the stops in the secondary group draw and work in octave pitch. The manual couplings are also duplicated. In this way the resources of the organ are augmented without appreciable increase of size or cost.

Melodic Coupler. By means of this, one manual (e. g. the Solo) may be coupled to another (e. g. the Great) so that on playing on the augmented manual, (i. e. the Great) in full harmony, the Solo organ will follow the melody, affording novel and useful effects. The appliance can also be used for individual stops (see "Positive-organ" in Glossary).

It is Mr. Casson's contention that the elimination of the worry with pedal stops and couplers and the immense range of effects lying under the hands by means of Duplication, render any elaborate combination actions unnecessary, even in organs of considerable size; a few very simple movements, easily learned because systematic, sufficing for the largest. Mr. Casson has also devised a compound stop-key of simple movement doing a great deal of varied work.

In 1888 Mr. Robert Hope-Jones, M. I. E. E. a consulting Electrical Engineer, commenced at Birkenhead to apply the result of an independent line of thought with regard

to the electric action in organs. The organ in St. John's Church, Birkenhead, was rebuilt by him in that year, and several improvements effected with respect to control, which attracted the attention of organists, and led to the development of many new features in organ construction. Various firms were first licensed to carry out these ideas, but in 1895 a company with Mr. Hope-Jones as Director and a large staff of workmen at Birkenhead (pending the erection of a factory in London) undertook the building of organs upon this new system. Investigating more deeply from a scientific point of view the subject of tone, Mr. Hope-Jones sought (by means of special apparatus showing the actual form of sound waves upon a mirror) to obtain the upper partials necessary for brilliancy from foundation stops of 8 and 4th pitch without resorting to mixtures. These studies led to the production of stops yielding new qualities of tone, some pipes being made to give certain upper partials in a very marked manner, whilst others, such as the "Tibia Plena" yield almost pure foundation tone in large volume. Such variety of scales have not hitherto been incorporated in any one instrument by previous builders; the exceptional narrowness of some of the string-toned stops, and the unusual proportions of the "Tibia" class being marked features of the system. The various new stops in these organs are described in the "Glossary". About a dozen patents extend from 1890, one of the most important of these being the "Diaphones". These were exhibited in 1894, and about twenty different kinds have been constructed experimentally by Mr. Hope-Jones. Many forms of this new method of tone production were explained and illustrated by the inventor in a series of articles which were published in 1896. The Diaphone may here be briefly described as an arrangement of valves within a box communicating with a resonator or pipe fixed over it. Two or three forms of Diaphone were used for the first time in the Worcester Cathedral organ in 1896, and an illustration of one of the simpler kinds will be found in the "Glossary".

In his electric action Mr. Hope-Jones sought not only to obtain a repetition of the utmost quickness, but also to throw the reeds and other pipes into vibration by a "percussive blow", so to speak; being in this way enabled to produce certain qualities of tone unobtainable from

ordinary actions. Roundness and smoothness of tone from the more powerful reeds, and great body and fullness of tone as well as depth from the pedal stops are also noticeable features in these organs. The hardness of tone in the treble part of many large modern organs is not found in them; a result probably as much due to the exceptionally liberal scales of certain of the "8ft" stops as to special voicing. Many of the leading players of the day have already expressed their entire approval of the abolition of mixtures, whilst by a few others they are missed. But it is an indisputable fact that an astonishing amount of brilliancy and power has been obtained without them, and the most important organ yet built by the Hope-Jones Company (that in Worcester Cathedral) though containing but 55 speaking stops as against the 126 registers of a few of the largest organs in the world, is one of the most powerful instruments yet built, containing also many new effects in the matter of tone-color.

A fair comparison of English work, such as we have here passed briefly under review, with the finest continental examples will show that our native craftsmen of to-day occupy a leading position, having succeeded in combining the Harmonic flutes and fine reeds of the French voicers, and the string-toned stops of the German builders with the best features of English work and superior methods of control. Not the least striking sign of the times is the remarkable progress made of late years by several provincial builders, who (often from humble beginnings and the bad effects of "cheap" work resulting from an unwise method of competition*, have, under fairer conditions, produced artistic work, and amongst those who have erected important instruments in London should be mentioned Messrs. Foster & Andrews of Hull, Brindley & Forster of Sheffield, Mr. J. Binns of Leeds, Messrs. Hele of Plymouth and Norman Bros. and Beard of Norwich; there are doubtless others worthy of mention with whose work the author is not so well acquainted.

* The disastrous policy so often pursued by committees in employing the builder who offers to erect the largest organ for the money, resulting in the use of cheaper and less substantial materials throughout, whilst *on paper* the quality seems equal to that offered by the apparently dearer builder.

Organ Building in America.

The first organ erected in America was imported from Europe in 1713 for Queen's Chapel, Boston. Several organs were thus ordered, at great cost, chiefly for Boston. In 1745 Edward Broomfield of Boston built the first organ in America, but the first native builder of note was W. M. Goodrich, who set up in business in the same city in 1800. In 1827 Messrs. Elias & George Hook began to manufacture organs. In 1854 they built for the Tremont Temple, Boston, an organ of 3 manuals and 56 speaking stops. The manual compass extended to A in alt (58 notes) whilst the pedal of 10 stops was restricted to D, 27 notes. The firm subsequently became known as Hook & Hastings, and amongst their numerous instruments may be mentioned the large concert organ at Cincinnati with 81 speaking stops and 28 couplers and other accessories.*

Henry Erben and the brothers Jardine also established themselves in America, building many organs.

Mr. Hilborne L. Roosevelt of New York made himself a name through his great mechanical ingenuity and his skill in the application of electricity. Although only 37 when he died in 1886, he had established a large factory in New-York, with branches in Philadelphia and Baltimore, and the remarkable organs in Garden City Cathedral (1880) and Grace Church, New York gave him a world wide reputation. These are extreme examples of the "divided" organ, being distributed over different parts of the church, the connection being by electricity. To this builder, and his son Mr. Frank Roosevelt, must be ascribed the invention of sliderless soundboards, and an elaborate system of adjustable combination actions. Two striking points in which American ideas have diverged from our own must here be mentioned; viz. the tendency to place almost the entire instrument in swell boxes, and a preference for a central balanced swell pedal. In the large organ of 109 speaking stops planned for Chicago Auditorium by Roosevelt's firm, 13 of the Great organ stops, the Swell, Choir, Solo and Echo were placed in separate Swell

* An engraving of the very beautiful and artistic case enclosing this organ is given in the latest edition (German) of Professor Töpfer's great work on the organ.

boxes, with a composition pedal to open and another to close all the boxes simultaneously. Messrs. Farrand & Votey are the successors to Mr. Roosevelt's business; up to the present year (1896) they have erected over 800 organs. Tracker action is almost entirely discarded by the leading builders in America, in favour of Electric or Tubular Pneumatic action.

An entirely new system of organ construction is now attracting attention in America. In 1894 John Turnell Austin patented his "Universal Air Chest" and, in connection with his brother Basil George Austin, induced the Clough and Warren Co., of Detroit, Michigan, to add an organ building department to their American organ factory. All the mechanism except the Key-action is included in the wind chest, and in large organs, an air-tight door gives admittance into this large chamber, where the valves and every portion of the mechanism are visible, and can be adjusted if necessary, without the displacement of any pipe or parts therewith connected. The feeders deliver into this large air space, and are not connected with any mechanism to give pressure. The pressure board is detached from the feeders, and is placed on the internal side of the air-chest, being actuated by flat springs of steel, rivetted at the angle. The springs work without friction, and the outward folding rib is made of such a size as to just compensate. The tubular pneumatic on the exhaust system, and also the electric and pneumatic systems in combination are used. It is claimed that an absolutely steady wind supply is only obtainable by the adoption of this system; that the wind does not, and cannot admit of the least variation whether one stop only is used, or all the stops on the sound-board, and that with the wind chests at present in use, transitions from one stop to a number would show great variations in pressure, could they be tested by the wind gauge, and that the precise conditions under which each pipe is voiced and tuned, are not, and cannot be maintained under all circumstances, save through the adoption of the "Universal Air Chest".

Up to the present, twelve organs have been built in America, and five more are under construction in accordance with this method. Its development will be watched with considerable interest, and it is to be hoped that

English organists may soon be afforded an opportunity of testing its merits.

There can be no *finality* in organ building. Whilst the violin fascinates by its perfection, the organ does so no less by its almost infinite possibilities, and modern science is fast transforming it into a highly sensitive instrument. The orchestral effects and overwhelming *crescendos* possible from such organs as those described in this work, "double touch", new methods of tone production such as the "Diaphone", the ease with which all the resources of a powerful instrument can now be placed instantaneously at the performer's command are developments of which Bach and Handel never dreamed, and the organs of the future may perhaps develop still further in directions unforeseen by the most advanced thought of the present day.

PART II.

Descriptive.

The keyboards.

The principal manual is termed the "Great" Organ. If another row of keys be added, it will be placed just above the Great, and is called the "Swell". The pipes belonging to this keyboard are enclosed in a box, and shutters, on the principle of a Venetian blind, worked by a pedal, enable the player to make a *crescendo* or the effect of an accent by opening the box; the effect when the box is closed is subdued and distant and, in the case of a large and fine Swell, a sense is conveyed of suppressed power. (See Sw. Box and Sw. Ped. pp. 44 to 46.) The third manual, placed below the Great, is the "Choir" organ, (the "Chayre" organ of ancient specifications.)* It consists of stops specially suitable for supporting a choir, (less bold and commanding in character than those of the Great) together with some imitation flute and reed "solo" stops.

* In Cathedrals, the pipes of the Choir organ were often at the back of the organist's seat, hence the confusion as to name.

Large organs have also a fourth manual, placed *above* the Swell manual, called the "Solo" organ, containing stops of special character. A few very large instruments make a still further demand upon the length of the player's arms in the shape of a fifth manual placed above this again; its pipes, enclosed in a swell box, are frequently placed in a distant part of the building to give the desired "echo" effect.

Compass of the Keys.

The usual compass of each keyboard is 56 notes, from CC to G. Many modern organs extend to C, five octaves, and it is highly probable that this extension will become general. The value of octave couplers is thereby greatly increased. In old organs the Swell was frequently minus the CC octave, and was then termed a "Tenor C Swell". Sometimes it extended only to "Fiddle G". The lower keys (if inserted) then acted only on a soft stop of the Great, or in some cases, upon whatever Great stops happened to be drawn. A few organs, for instance, that of Westminster Abbey previous to the recent rebuild, had a "Great" extending to CCC; — the "Choir" of the Abbey organ retained the old GG. compass, whilst Swell and Solo were of the usual CC compass.

The Pedals.

These are simply larger keys played by the feet. When raised at the sides and made to radiate toward the player, they are termed "concave and radiating".* The short keys are also made to assume a semicircular form in front. We have, therefore, four kinds of pedalboards:—

1. Straight,
2. Straight and concave,
3. Concave and radiating,
4. Radiating without the concavity.

Underneath each pedal is a stout steel spring to enable it to return, and behind the knee-panel is the tracker and roller board arrangement transmitting the movement to the pedal stops, which are usually placed either at the back of the organ or at the sides.

The older pedal boards in English organs are often

* Concave pedals were first introduced into England by Schulze in 1851; Radiating pedals by Elliott & Hill in the organ in York Minster in 1834. Both principles were combined by Henry Willis.

too narrow for firmness and certainty in pedalling. In Germany, they are somewhat inconveniently wide; much wider than any scales used by English builders. After several years' experience upon each kind in succession the author pronounces decidedly in favour of a slight concavity, but against the principle of radiation, which, though it may somewhat favour "toe and heel" playing with one foot at the extreme ends of the pedal boards, proves better in theory than in practice. Since the long keys are not always pressed down on one particular spot, but the left foot must pass frequently behind the right, the player's impression of the distances at the ends of the pedal board is altered and disturbed by the radiation.*

Compass of the Pedals.

From a modest octave the range has been extended upward from CCC to F, 30 notes, at which notes, the compass appears finally fixed.** The pedals of many large continental organs have only C \sharp and D over the two octaves as, for instance the Haarlem organ with 15 pedal stops.

The Pipes.

The different sets of pipes, termed in organ phraseology "stops" "or registers" may be considered under three main classes, — "open", "stopped" and "reed".

Open Pipes.

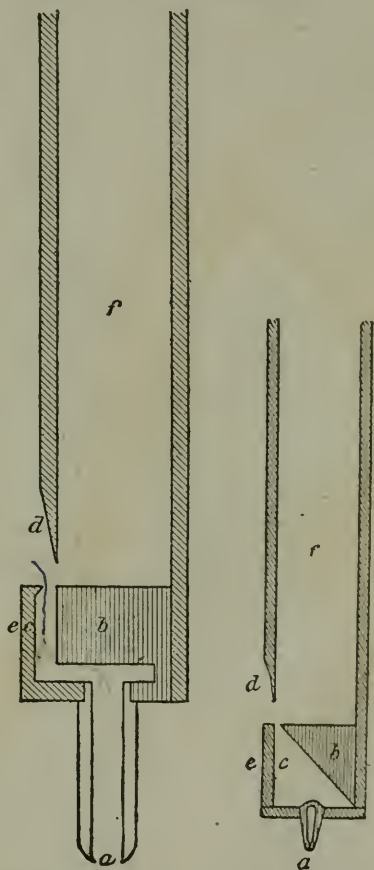
To this class belong the open Diapason, Principal, Fifteenth, Mixture work, Dulciana, Salicional, and the various Gambas, amongst metal pipes, whilst the Clarabella, Hohl Flute and pedal Open Diapason will be the most familiar instances of open wood stops. The scale, nature of material, its substance and method of "voicing" and

* It is much to be wished that the excellent scales for straight and concave pedals recommended by the College of Organists at their conference in 1881 were universally adopted. As it is, organists are greatly inconvenienced by the present want of uniformity in the scale, shape and location of pedals.

** The organs in the Albert Hall and Alexandra Palace, London, by Willis; one at Kronstadt by Walker of Ludwigsburg, and a few others have a pedal compass of 32 notes, but there appears to be no desire on the part of players for the extension.

shape of mouth account for the great differences in tone quality of the various open stops enumerated, the general principles of construction remaining the same. The air entering at the narrow aperture termed the *foot*, *a*, being checked by the *block* or *languid* *b*, rushes out, and is cut by the *lip*, *d*, part of it passing out through the mouth of the pipe and part ascending and passing out at the top. The pipe thus set into vibration yields a note in accordance with its length, reckoned from the mouth to the opening at the top. We thus speak of "8ft" stops, meaning that the lowest CC of the keyboard requires a pipe of this length, measuring from the top. As we ascend the scale, the pipes, it will be noticed, rapidly decrease both in length and diameter, each octave in succession only requiring pipes half as long as those of the octave below it, so that, on reaching the highest C of the keyboard the length will be only 6 inches. Owing to differences in scale this method of measuring pitch in feet and inches will be subject to a little modification in certain stops. If the back of the pipes constituting the front of an organ be examined, it will be noticed that some appear cut across in several places toward the top. All that part above the lowest of these cuts is merely added to preserve an imposing or symmetrical appearance, having no effect upon the pitch of the note.

Fig. 5. Wood pipes.



English form.

German form.

a) pipe foot. b) block. e, c) cap, with lower lip. d) upper lip. f) body of pipe.

Stopped Pipes.

In these, the air, passing up the pipe is prevented from getting out at the top by a plug, termed the stopper. It has, therefore, to descend again in order to escape at the mouth, and travelling thus a double journey, an octave lower in pitch than the apparent "speaking length" of the pipe is the result; e. g. "8^{ft} tone" from a 4^{ft} pipe. The chief stops of this class are the Bourdons (16^{ft} tone) the stopped Diapasons and Gedackts and some of the flute family.

Reed Pipes.

The Reeds form quite a distinct class, and are usually grouped together at the top of the other draw stops belonging to the same manual. It will suffice here to mention the Oboe, Horn or Cornopean, and Contra Fagotto on the Swell; the Trumpet or Posaune on the Great; the Clarionet on the Choir; and the Trombone on the pedals as the most familiar examples of this class of stops; each imitating with more or less fidelity the orchestral instrument of the same name.

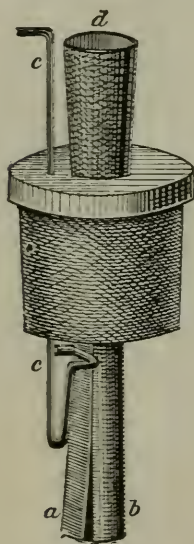


Fig. 6.

Reed with "boot" (enclosing the lower part) the pipe fitting into the hole at the top, being removed.

a) tongue. b) reed. c) tuning wire. d) socket into which the pipe is fitted.

The principle of construction is as follows: — A brass tongue attached to a small cylindrical brass tube termed the reed, is set in vibration by the pressure of air passing into the lower end of the "boot" as that part which encloses it is termed. A metal or wooden tube whose vibrations correspond with those of the reed greatly enrich the tone in quality,* and this feature constitutes the essential difference between the organ reed and that of the harmonium. A tuning wire (c)

* "When reed and pipe synchronise perfectly, the sound is most pure and forcible; a certain latitude, however, is possible on

both sides of perfect synchronism. But if the discordance be pushed too far, the pipe ceases to be of any use. We then obtain the sound due to the vibrations of the reed alone." — "Sound", by John Tyndall, D. C. L.

presses against the tongue, and the tube at the top is fitted with a metal shade which is used to modify the roughness or inequality of any particular note. The fitting or "voicing" of the little brass tongues is a particularly delicate and difficult matter, calling forth the organ builder's highest skill, and requiring a keen ear for tone quality. Reeds are of three kinds; "open", "closed" or "free". In the former, the opening against which the tongue vibrates extends all the way up, yielding a powerful tone. In the second kind the opening only extends part way; in the "free" reed the tongue vibrates freely into the opening instead of striking against it.

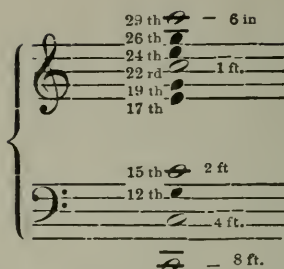
Foundation Stops.

An organ composed of "8^{ft}" stops, i. e. stops of unison pitch, would, it was soon found, lack brightness of tone. The octave above (4^{ft} pitch) and the octave above that again were therefore added (2^{ft} pitch, termed the 15th being 15 notes above the lowest note of the manuals). These smaller 8^{ve} stops are termed by the Germans "Secondary stops" (Seitenstimmen). Stops of 16^{ft} pitch, — an octave *below* the 8^{ft} stops add gravity, yet the whole, without the "filling in" imparted by the compound stops does not give the desired sense of brilliancy combined with power. (Cf. p. 20, Hope Jones system).

Compound Stops.

These consist usually of from 3 to 6 ranks of pipes, some of which do not give C on the C key, but various intervals. Next to the octave sounding ranks, the "fifth" sounding ones are the most important of these "mutation" sets of pipes. The higher harmonic sounds which are not sufficiently prominent in the foundation stops of 8^{ft} pitch, are in this way represented and corroborated. Such compound stops are variously termed, Full, Grave, Acute or Sharp Mixture, Sesquialtera, Cornet, Echo Cornet, Fourniture, Plein Jeu, Cymbal, etc. These are the intervals* from which mixture stops are compounded: —

* 31, 33 and 36 appear on the two organs in Milan Cathedral, but as the "Trigesima sexta" would only be three inches at CC, it obviously cannot be carried far. The \sharp 20th appears in some organs, for instance, Cavaillé Coll's at Notre Dame, Paris.



Sometimes the 15th and 12th are made to draw as a separate mixture (Ger. "Rausch quint" or "Rausch pfeif"), which is, however, a mistake (unless there is a separate stop of 2^{ft} pitch on the same manual), as the 15th is sometimes useful without the 12th. A "complete" two manual organ should possess the 15th and 12th as separate stops, in addition to a mixture of 3 or 4 ranks according to the number and power of the foundation stops.

As several of these small sets of pipes would be ineffective or "expire in their efforts to cleave the gamut" as one writer aptly puts it, "breaks" or "returns" to some of the lower ranks are introduced at two or three places in the scale where such changes in the composition of the mixture would be least felt. Frequently, both Great and Swell Mixtures, in ordinary two manual organs consist only of "octave" and "fifth" sounding ranks as follows: —

III Rank Mixture.

Intervals: — 15. 19. 22 from CC to middle C.
 „ 8. 12. 15 „ middle C[#] upward.

IV Rank Mixture.

Intervals: — 19. 22. 26. 29 from CC to fiddle g.
 „ 15. 19. 22. 26 „ fiddle g[#] to middle c.
 „ 12. 15. 19. 22 „ treble c[#] upward.

Even five rank Mixtures are introduced without any "third" sounding rank, as by Messrs. Lewis. The 17th or Tierce is the most important of the two "third" sounding ranks, shown in the figure (17 and 24) and ordinarily forms the lowest rank of a III rank Sesquialtera (see Glossary) which would then begin with 17. 19. 22. as in Smith's organ at the Temple Church. In Harris and Byfield's famous organ in Doncaster church (destroyed by fire) the Tierce drew separately (a frequent custom with Harris) and the V rank sesquialtera contained: —

Intervals: — 19. 22. 24. 26. 29 from CC to middle C.

„ 8. 12. 15. 17. 19 „ middle C \sharp to the top.
Harris's organ at St. Peter's Mancroft, Norwich, contained both Tierce (17th) and Larigot (19th) as separate stops with a III rank Sesquialtera (beginning 19. 22. 26), II rank Mixture (29. 33) and III rank Furniture (22. 26. 29). The 23rd rank ascended to tenor C, when it was exchanged for a 26th.

All the above compound stops are formed of pipes of the open Diapason kind, varying in scale, the "third" sounding ranks being proportionately the smallest and weakest. A compound stop is not placed on the fourth or "Solo" organ; on the "Choir" only in very large instruments; sometimes it appears on the "Swell" of small organs whilst absent from the "Great". Compound stops have, in one or two instances been formed of reed pipes, but with unsatisfactory results, the practical inconvenience of smaller reed pipes than those of 4^{ft} pitch being of itself sufficient to prevent further attempts in this direction.

Compound stops are frequently met with on the pedals of German organs, and have sometimes been introduced into large English instruments, as in the Albert Hall organ (see Part. IV). Mixtures of 2, 3 and 4 ranks, in addition to a separate Quint and Twelfth, form part of the large pedal organ by Messrs. Hill in Sydney Town Hall.

In old organs, containing, as they frequently do, an over-proportion of mixture work, resulting in a great want of dignity, (whilst yet not too powerful, or perhaps, not powerful enough for the building), the proper course to pursue generally is to *add foundation stops* of 8 and 16^{ft}, when the mixtures will become duly subordinate to the general effect, and fulfil their rightful function of adding brilliancy and fullness, but without overpowering the Diapason tone.*

* As an extreme instance of an excessive number of mixture ranks controlled by single draw stops, may be mentioned Gabler's organ in the Monastery at Weingarten, where the Great Organ of 16 stops contains a Sesquialtera of VIII ranks, a mixture of XX, and a cornet of VIII! Of course many of these ranks must be duplications, also presumably containing some of the more rarely introduced members of the harmonic series, such as the "sharp 20th" or "flat 21st" of the harmonic series ($1\frac{1}{7}$ foot) inserted in some continental organs. When all the ranks of a mixture are not

Materials used for Organ Pipes.

The metal pipes are made of an admixture of tin and lead. "Metal" in organ builder's phraseology means about

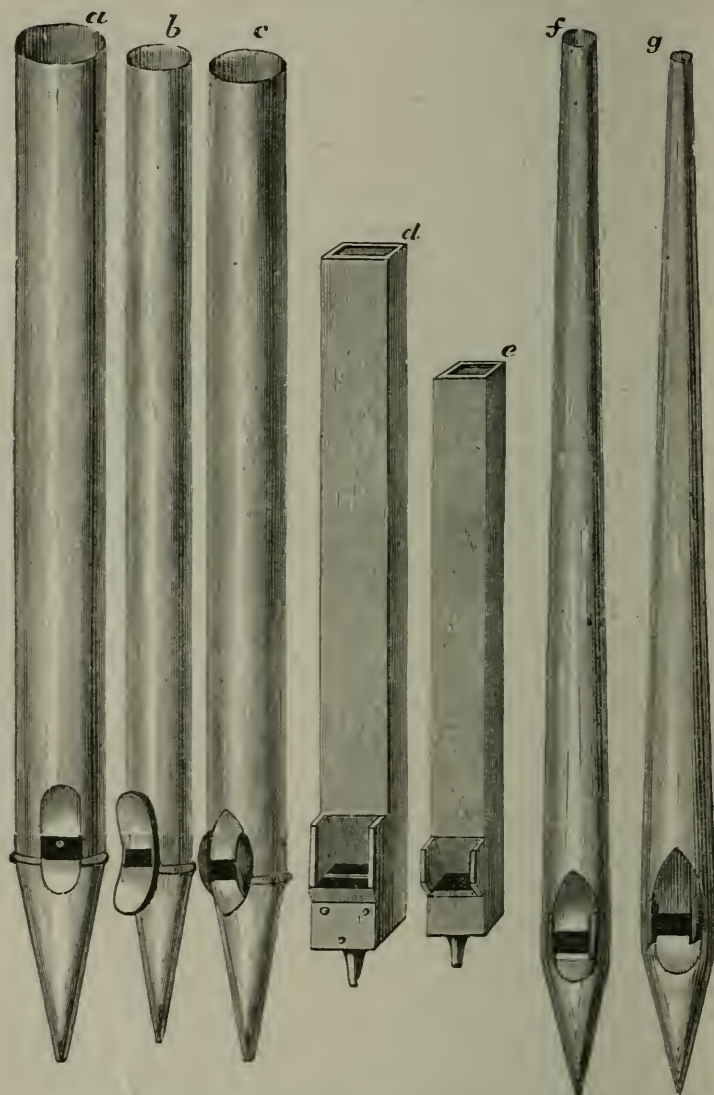


Fig. 7. Various forms of Open Pipes.

a) Wide scale. b) Narrow scale. c) Medium scale, with variously formed mouths as met with in German organs. d), e) Wood pipes. f), g) Cone Gamba.

maintained throughout the entire range of a manual, they are said to "die out".

one part tin to three parts lead, and is most generally used for its cheapness.*

Spotted metal consists of about half tin and half lead, and is more durable, yielding a tone of finer and more

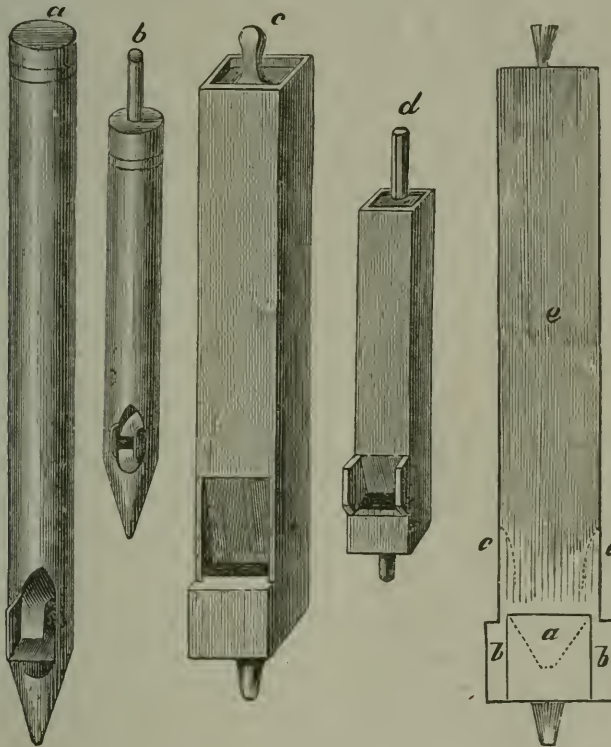


Fig. 8.

Various forms of stopped pipes.

a) Quintaton. b) Rohr Flute. c), d) Wood pipes. e) Side view of German "Doppel Flöte" (pipe with double mouths).

brilliant quality. The tin shows on the surface in bright spots against a darker background, giving the pipes a handsome appearance, and dispensing with the necessity

* As even lead looks bright when quite new, inexperienced persons are apt to be deceived into imagining the pipes of a new organ to be of a much higher standard than they really are. It is desirable, therefore, in the interests of artistic organ building that all who may one day have to do with the erection of new organs should possess some knowledge of the quality of metal used for pipe work.

of diapering or gilding. Pure tin is still firmer and more durable, but is less often employed in this country than in Germany. It makes an exceedingly brilliant front. As it fuses easily, a small percentage of lead is always alloyed with it.

Zinc is cheaper than any of the above mixtures. Its disadvantages are, a lack of "body", richness and travelling quality of tone, and a tendency to rattle when used to form the front. For small pipes it is utterly unsuited, but is often used for 16th stops with good results. When used for the lower 8^{ves} of the diapasons, "metal" mouths are a necessity.

For stops of the Gamba class, spotted metal or a still higher percentage of tin is particularly desirable; but whatever the proportion employed, good substance, skilful "voicing", and a neat and clean finish are even more important factors in the production of tones of rich, musical quality.

The wood pipes are generally made of well seasoned pine, free from knots, as being easy to work, and capable of yielding a pure, mellow tone. Some of the old builders, — notably Father Schmidt — often used oak for the Gedackts and Flutes, which gives a strong, clear tone, and is of course particularly durable.

Arrangement of the Pipes.

In ancient organs the pipes followed each other semi-tonally on the sound board, and this plan has been revived by Schulze and Walcker in Germany, Brindley and Foster, Kirtland and Jardine and others in England with the object of simplifying the action from key to pallet.

The ordinary arrangement is to plant the pipes alternately, i. e. the CC to the player's extreme left, the CC¹ to the extreme right, and so on; thus avoiding the inconvenience of having all the large and heavy pipes at one end of the soundboard. Sometimes the largest pipes are placed in the centre, the alternate plan being still followed. Another system is to place them in regular succession with the exception of the lowest octave, which is divided between the two sides.

Conveyances.

The bass pipes of some 8 and 16th flue stops, notably the Great Open Diapason, are employed to form the front,

and being placed apart from the soundboard, metal tubes termed "conveyances" are employed to convey the wind from the soundboard holes to the pipe feet.

The action between the Keys and the Pallets.

There are several different systems in use; the "Tracker", "Tubular Pneumatic", "Pneumatic Lever" and the "Electric", with various combinations of the Electric and Pneumatic systems.

The Tracker Action.

This is most frequently used, and for very small organs presenting no complications with regard to position,

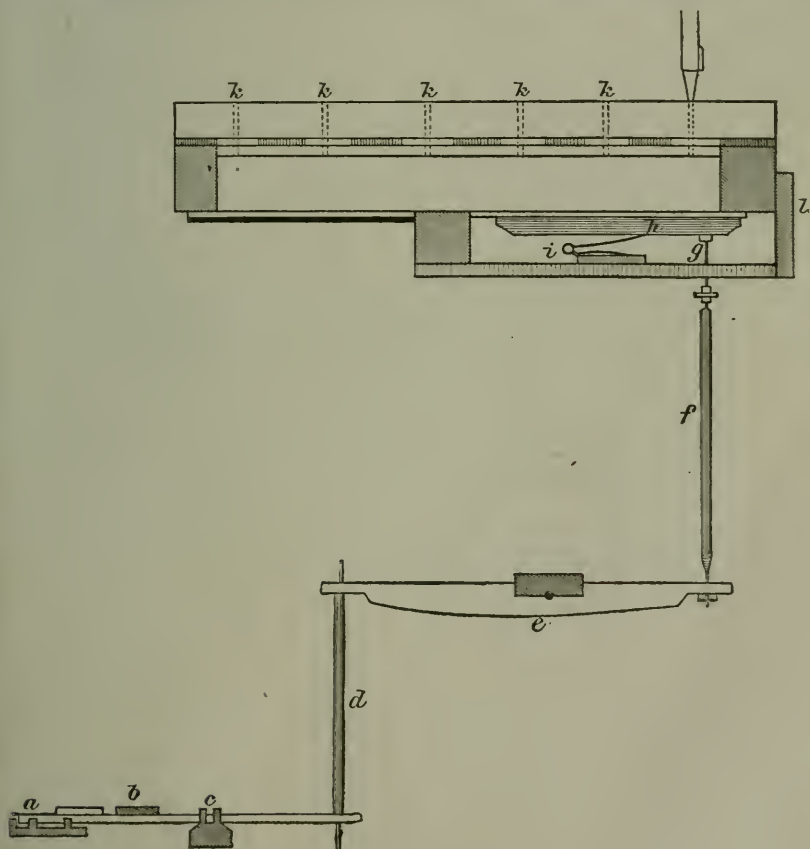


Fig. 9.

Side view of key action and wind chest.

is the most suitable, if carefully finished. Trackers are narrow slips of pine varying in length according to the

distance they have to transmit the movement. The key being pressed down at *a* rises at the opposite end, causing the *sticker* *d*, to push up one end of the *backfall*, *e*, whose other end, falling, takes with it the *tracker*, *f*, which pulls down (by means of the *pull-down wire* *g*) the *pallet*, *h*, which, whilst closed, prevents the wind — forced by the bellows into the wind-chest — from entering the foot of the pipe. Still the wind cannot enter unless, by previously drawing a stop belonging to the same keyboard as the key we have put down, the *slider* (a long, flat piece of wood pierced with holes) is moved so that the perforations correspond with the channels leading to the pipe feet. As a familiar illustration the reader may think of the working of a slide in a magic lantern (substituting light for wind) the principle being the same. *c* is the *pinrail* upon which the key is balanced, *b*, the *thumping board*, a piece of wood weighted with lead, which prevents the key from springing out of position.

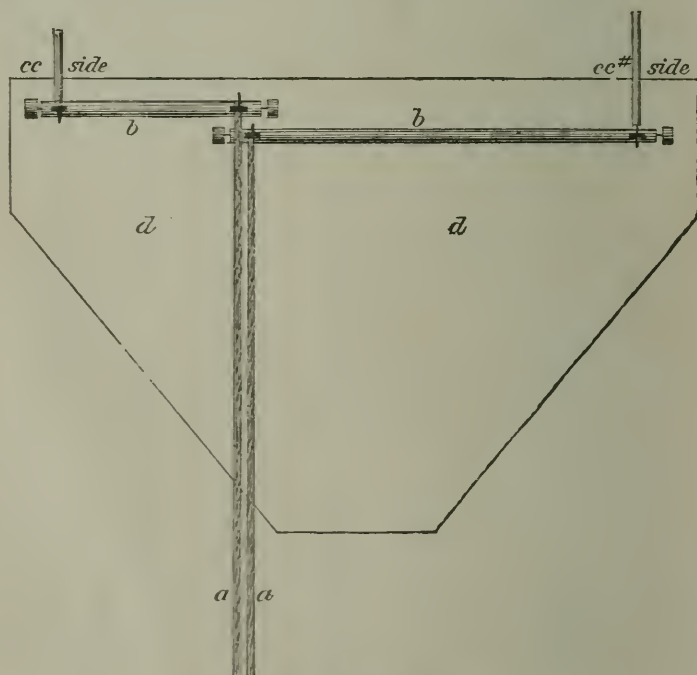


Fig. 10. Roller board.

a, a) Are trackers from two adjacent keys showing how the rollers, *bb*) attached to a stout irregular shaped board or frame, *dd*) transmit the motion from the *cc* side to the *cc#* or vice versâ.

The Fan Frame and Roller Board Movements.

As the soundboard, arranged to take the feet of pipes greatly varying in diameter, is much longer than the keyboard, it is obvious that the key action cannot be perfectly direct throughout. When the backfalls are spread out in the shape of an open fan, it is termed a *fan-frame* or *lever* movement. In a *roller board* movement, rollers of iron or wood, turning partially round, transmit the key movement from one side to the other.

The Sound Board.

The top and front of a sound board of 12 stops is here shown, portions being cut away that the underlying construction may be seen. At *d. d.* seven of the sliders are shown. These are moved in and out by an arrangement of arms and levers controlled by the draw stops. The pipes, as in the solitary specimen given at *u*, pass through the *rack board l* (a thin layer of pine, mahogany

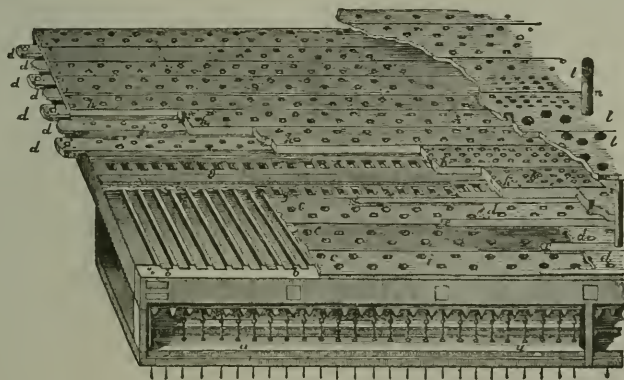


Fig. 11.

a) Wind chest with pallets and pull downs. b) Sound board grooves and bars. c) Table. d) Sliders. e) Bearers. g) Channels. h) Upperboards. l) Pipe rack or rack board. m) Rack pillar.

or cedar) and rest on the holes prepared for them on the upper board. *b, b* are the grooves above the pallets (one to each pallet) along which the wind passes seeking exit through the channels which lead up to the sliders. If one of these twelve stops be "out", the holes in the slider will coincide with the holes underneath the pipe feet of this particular set of pipes. When "in", the unperforated part of the slider blocks the way. Bearers *e, e*,

support the edges of the upper boards that the sliders may work freely; *rack pillars, m*, support the rack boards. It must be understood that the shallow rectangular box, termed the wind chest, in which the wind is finally stored before admission to the pipes, is carefully closed at *a*, by the front board, the wind trunk being fitted into the side opening.

The Bellows.

Having shown how the mechanism set in motion by the depression of a key operates upon the pallet, we will now turn to the bellows handle and see how the pipes are supplied with wind.

The bellows usually occupies the greater part of the ground space taken up by the organ. The ordinary blowing arrangement may be seen by removing some of the panels at the back of the organ. Occasionally the bellows is placed overhead at a little distance from the pipes, as in the accompanying diagram, which enables us to show more clearly the working of the counter-balances.

A bellows handle is a lever, *n*, which operates upon the feeders, *a*, *b*. These are perforated at the bottom with large holes covered inside with leather valves working on a hinge at one end, on the same principle as the common house bellows. When a feeder is distended by the movement of the bellows handle, the outside air, raising these valves rushes in, and is prevented from getting out again by the return movement of the handle, the inside pressure causing the valve to close the opening through which the wind entered. It accordingly forces open the valves in the bottom board of the *reservoir* (upper part of the bellows) to which the feeders are attached. When the feeder has thus emptied its contents into the reservoir, the valves, closing, prevent any return of wind into the feeder. Thus by a few strokes of the bellows handle the reservoir is stored; one feeder pouring its contents into the upper part of the bellows whilst the other feeder is being refilled. Weights, — slabs of cast iron — are placed around the edges of the upper board of the bellows, and by a contrivance called an *Anemometer* or *wind-gauge* (see Glossary of terms) the pressure of air is measured in inches and the weights adjusted to give the amount of force desired.

The *counter balances*, or *bellows registers*, g, g, thin pieces of iron fixed to the upper, middle and bottom boards cause the two folds to open equally.

A *Waste Pallet* obviates over-distention of the bellows. A vent is cut in the middle board, and a pallet placed

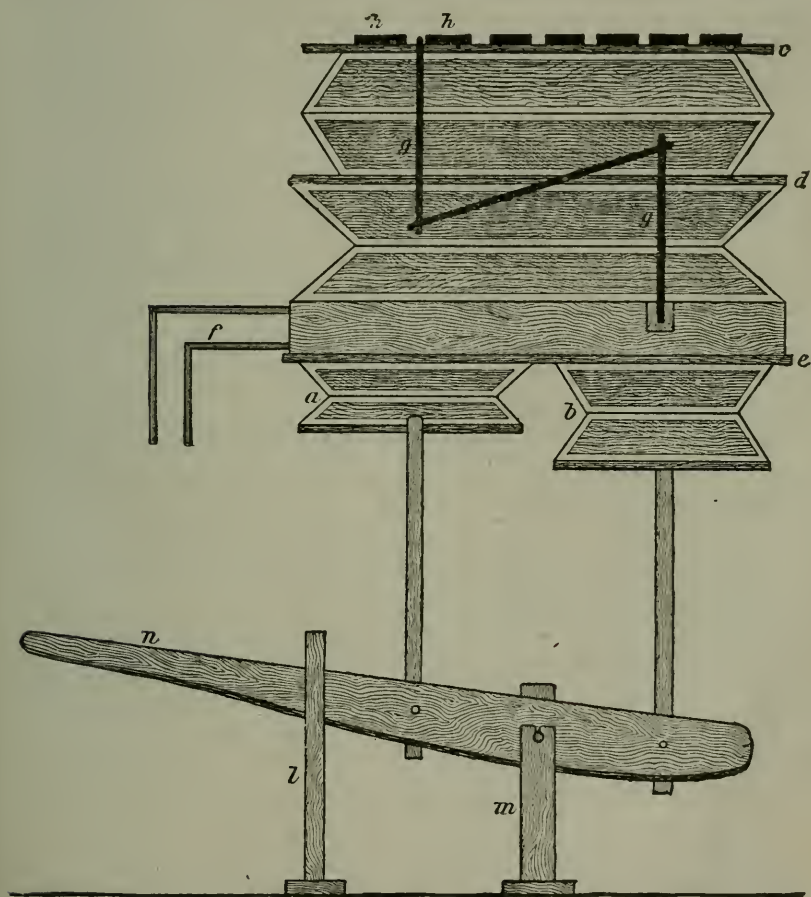


Fig. 12. The Bellows.

a, b) Double feeders. c, d, e) Upper, middle and bottom boards. f) Wind trunk. g, g) Counter balances. h, h) Weights. i) Well. l) register. m) Bellows post. n) Bellows handle.

on it, secured by a rope to the upper board, which on the reservoir rising to its full extent, automatically lifts the pallet, allowing the wind to escape underneath, thereby guarding the bellows against excessive strain.

The *Wind Trunks* are wooden tubes (occasionally metal) sometimes of considerable length, let into the reservoir, the other end into the wind chest. The weights on the upper board of the bellows forces the wind through these wind trunks into the wind chest.

The bellows shown in the diagram are of the "horizontal" kind universally employed in England, and so named because the top remains always level. In the diagonal kind, chiefly made in Germany, the top rises diagonally, one end rising whilst the other remains stationary, the bellows assuming the form of a wedge.

The *Concussion Bellows*.* This is a small bellows fixed either to the wind trunk or to the underpart of the wind chest, fitted with a spring on its outer side. The wind passing through the wind trunk partially inflates it, but when a sudden demand on the wind supply occurs, the reduced pressure enables the spring to fulfil its function of forcing in the side of the concussion-bellows, which, emptying the wind it contains into the wind trunk, helps to counteract the deficiency. Per contra, if the wind supply is likely to prove excessive, the concussion bellows, inflating, takes off some of the over-pressure.

Separate Reservoirs.

In high class organ work separate reservoirs are provided and placed underneath the wind chests of different departments to prevent any tremulousness resulting from unsteady blowing or from sudden transitions from *ff* to *pp* or vice versâ. Flexible connections are often made from the top of the bellows to the reservoirs.

The Pallets.

The upper surface of the pallets are covered with white leather on felt to enable them to fit closer and close silently. The underpart is brought to a point in order that less resistance shall be offered to the compressed air of the wind chest. The wires underneath the front of the pallets are the *pull-downs*. The opposite end of the pallet works of course on a hinge (see Fig. 9) and a wire spring closes it when the key is released. As in large organs

* Invented by Mr. J. C. Bishop and first applied to the organ in Old Covent Garden Theatre.

the pallets are of considerable size, — sometimes as much as $1\frac{1}{2}$ foot long and 4 to 5 inches broad in the case of pedal pallets, — the resistance offered by so large a surface having to move against compressed air makes the touch heavy. Various ingenious contrivances have been successfully employed to overcome this drawback, such as the “relief” pallet, “valve” pallet, double, jointed, divided or split pallets; the principle being generally to cause a portion of the pallet to move first.

The Draw Stop Action.

The draw stop *a*, when pulled forward by the player, causes a stout, upright roller, termed a *trundle*, *b*, to

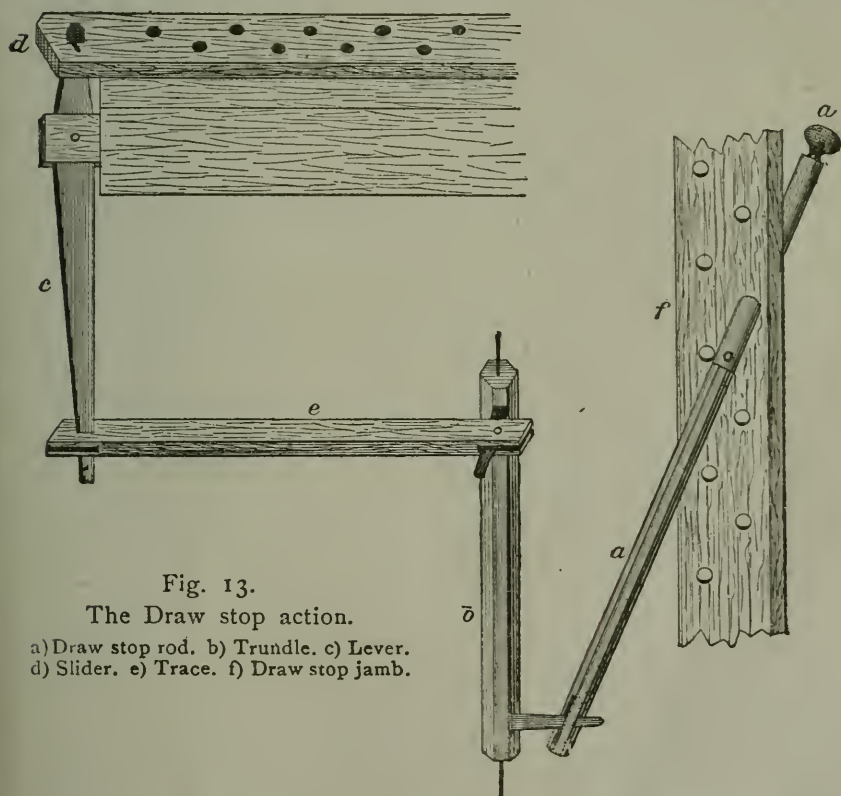


Fig. 13.









The Draw stop action.

- a) Draw stop rod. b) Trundle. c) Lever.
d) Slider. e) Trace. f) Draw stop jamb.

move on its axis; the horizontal rod, — the *trace*, *e*, to which this is morticed, is centered at the other end to an upright lever of iron or wood, *c*, whose upper end pushes out the *slider*, *d*.

The Composition Pedals.

These are small iron pedals placed a few inches higher than the short keys of the pedals. They control the draw-stops, pushing out certain groups and taking in others, if out. In modern organs they are always thus "double acting". Blocks screwed to the traces of the stops to be actuated are controlled by an iron bar, or "composition iron". This iron passes without contact over all the other traces, which may or may not be operated upon by the composition iron of another pedal. The actual working must be seen to be fully understood, and there are, naturally, many differences in construction in organs by different builders. The combinations from *p* to *ff* should always be arranged from left to right, and a convenient grouping of stops for the specification given in Part III would be as follows: —

Pedal		Swell			Great		
							
Bourdon and Violoncello.	Full Pedal.	Gedackt and Gamba.	Gedackt, Gamba. Open Dps. and Principal.	Full Swell.	Clarabella.	Clarabella Open Dps. 1 and 2 and Principal.	Full Great.

Combination Pistons.

These are small knobs placed in the key slips between the manuals, which, by means of pneumatic action, control easily any desired grouping of stops with a slight touch from any disengaged finger. If the organ contains Pistons in addition to the composition pedals, they may be made to give *special* combinations as for instance: — On the Swell, No. 1 might act on Gamba and Voix Celestes, No. 2, Gedackt and Oboe, etc. On the Choir, No. 1 might

act on Clarionet and Gedackt, No. 2, Wald Flute only; No. 3, Gedackt and Dulciana, No. 4, Full choir.

On large instruments* one piston might give a grouping of flute tone; another of string-toned stops, and another of reeds; others, solo effects as indicated above; the composition pedals giving suitable gradations of power.

The couplers are sometimes actuated also by the composition pedals or combination pistons, especially the Great to Pedal, this coupler being often provided with a special "on" and "off" pedal or piston.

The Ventil System.

In this system, — more favoured on the continent than in England, — instead of draw stops being put in and out, the wind is cut off from supplying the pipes, leaving the draw stop mechanism unaffected. Mechanically, it is a more effectual action than the other, as the composition pedal action requires frequent supervision to make it do its work silently and thoroughly, — leaving no stops partly out, and always throwing out those operated upon to their fullest extent — but the ventil system is open to the serious objection that the stops drawn do not show the true state of the organ at all times.

Modern Systems of Control.

A reference to the specifications given of a few modern organs will show that various builders have, through the employment of pneumatics and electricity given organists the power of *altering the combinations themselves during the course of a piece*. But such conveniences are as yet found only in a few organs.

A very perfect system of adjustable combination action has been invented and patented by Mr. J. J. Binns, Bramley, Leeds, and first applied by him to a chamber organ at Tadcaster, Yorkshire. Three composition pedals are provided for the Great and Pedal Organs. Over the Great draw stops there are three interchangeable pistons. The player may draw any Great and Pedal stops he

* See Specification in Part IV, Berlin Philharmonic.

pleases, and then pull out the first piston, and let it go back again. This "fixes" the combination, and no matter what Great or Pedal stops are subsequently drawn, *his first combination pedal will always give him the particular combination he has thus prepared.* For the second and third combinations he pulls out other grouping of stops, "fixing" them in the same way by the combination pistons, and they instantly become attached to the second and third composition pedals respectively. Three similar pistons with their corresponding pedals control the Swell stops in the same way, and the player can not only change the selection of stops he desires his composition pedal to act upon to suit each piece, but suitable opportunities may be found during the course of a piece to prepare any special combination in advance. The system is applicable either to tubular pneumatic or electric organs. The "Stop switch" of Mr. Hope-Jones, Mr. Lewis's Pedals for interchangeable combinations, Messrs. Brindley and Foster's interchangeable pistons, are also applications and developments of Roosevelt's "Automatic adjustable Combination action", first applied by them to an organ built in 1872/73, in various ways enabling the player to alter his combinations, or to prepare in advance different groupings of stops and couplers.*

The Swell.

The pipes belonging to the upper keyboard, in organs of two and three manuals are enclosed in a wooden box provided with shutters in front, and (occasionally also at the sides) on the principle of a Venetian blind. The shutters have bevelled edges covered with felt and are about ten inches in width, running the whole length of the box, and are worked by a swell pedal placed to the extreme right, or, in case of a "balanced" swell pedal, frequently in the centre of the composition pedals. To

* In 1896 Herr Wiegler of Stuttgart exhibited in London a small organ having a system of adjustable combination stops, each stop, however, requiring a small knob placed over it, the stops themselves not being moved. He also showed a few pipes of peculiar form, with mouths extending around three-fourths of the diameter of the pipe. Placed on a 12 inch wind their power was very great, though obtained at the expense of quality.

obtain a subdued and distant effect when the box is closed, it is necessary that the sides and shutters should not be less than 2 inches thick, and be thoroughly tight fitting, or the crescendo obtainable as the shutters are being opened by the swell pedal, will be feeble and ineffectual. Sometimes $\frac{1}{2}$ to $\frac{3}{4}$ inch boards are used (the box being 3 inches thick); the space between being filled up with sawdust, tightly packed, and the interior of the box is, or should be, lined with stout brown-paper for the further retention of the sound within the box. In very large organs with from 20 to 25 stops in the Swell, a brick chamber is occasionally built. Sometimes the Choir and Solo organs are enclosed in a Swell box, and a portion of the Pedal organ is also sometimes included in the Swell box. The conditions of an effective Swell are: —

1. Box thick and tight fitting.
2. Space enough inside to prevent overcrowding of the pipes or undue compression of air when the full swell is used for some time with the box closed.
3. Box raised and situated so that the shutters shall not open directly against the other pipes of Great or Pedal organs, or the tone be blocked in its egress against a dead piece of wall, or pillars.

Sometimes one or two solo stops such as the Vox Humana have been enclosed in a small box within the larger one: — a "Swell within a Swell", but the result is not in proportion to its cost. American builders have gone to greater lengths than any others in their desire to make every department of the organ expressive, by enclosing nearly all the stops, — even part of the Great and Pedal organs — in Swell boxes.*

As to the effect on the tone of the pipes, reeds are decidedly improved by being enclosed, but the open Diapasons lose much of their round, full and pervading quality of tone, the effect being seldom if ever equal to that of an unenclosed Diapason, even when the box is opened to its fullest extent. When two departments, for instance, Swell and Choir organs are each provided with separate Swell boxes, some charming effects can be produced

* The organ built by Green for the Chapel Royal, Windsor, in 1790 was thus treated, sham pipes being provided for the front. The "General Swell" enclosing the Great was removed by Gray.

by a *decrecendo* from one division whilst a *crescendo* is being produced on the other.

By some modern builders the shutters are placed *perpendicularly*, moving vertically, a dubious "improvement" as they do not close so easily or so tightly as when assisted by their own weight in the ordinary position; and in tuning the reeds instead of removing one or two of the lower shutters to get at the tuning wires, it is oftentimes necessary to displace all. A separate board should be provided at the bottom for access to the tuning wires of the reeds.

To obtain a kind of "mezzo forte" effect, by fixing the box partially open, so that the foot may be released for the proper use of the pedals, a "ratchet" arrangement is sometimes made, — notches cut in the swinging rod of the swell pedal, or in a piece of wood screwed to the side of it, to hold the swell pedal at the desired distances, but this device has not yet been very generally adopted. It is more conveniently obtained by means of the

Balanced Swell Pedal,

which, hinged and weighted, remains fixed open exactly at the point at which the foot leaves it. This kind, however, possesses along with this advantage one slight drawback; the closing is not effected rapidly by simply letting the foot follow the upward ascent of the pedal (after knocking aside a swinging rod) but by pressure; the opening and closing being effected by toe and heel, involving the free use of the ankle joint as in the treadle of a sewing machine.

That the whole organ may be exposed to the same atmospheric influences it is necessary either to keep the swell box fixed open, or to open it some minutes before a service. The latter plan saves much dust from the pipes, but is not in all cases sufficient to keep the enclosed and unenclosed stops in tune with each other. This precaution must not be neglected for instance, during the sermon, or on any similar public occasion when the organ is silent for some time, as the gradual rise in the temperature from the breath and warmth imparted to the atmosphere by the presence of a congregation, will, in most buildings considerably affect the pipes.

The Couplers.

In the smallest modern two manual organ will be found draw stops labelled "Swell to Great", "Great to Pedals", and "Swell to Pedals". When the former is drawn, playing on the Great organ takes down the keys of the Swell organ also; the other two couplers connect their respective manuals with the pedals in like manner. To couple the keyboards in old organs it was sometimes necessary to pull forward the keyboard itself about $\frac{3}{4}$ inch by means of metal knobs at the end of the keyboards, an arrangement which existed in the organ in the Kreuz-Kirche, Dresden (since rebuilt) so late as 1893. In another obsolete kind, the draw stop was fastened by a hook to prevent it from running back. Another kind no longer made, but still sometimes met with, known as the "tumbler" coupler, possessed this disadvantage, that the fingers had to be lifted, or were forced off the keys when it was being drawn.

Messrs. Kirtland & Jardine of Manchester are accredited with an improvement upon the "tumbler" coupler, termed the *sliding* coupler. At the back end of the "Great" keys the upper surface would be cut at an angle, and the inclined plane thus formed covered with leather and black-leaded. The "under" edge of the Swell keys received a similar incision, but with the incline reversed. Through this hollow in the swell keys, tapped wires passed, regulated by a button at the end. Short upright stickers were caused to glide up the inclined plane at the end of the "Great" keys, by the action of the draw stop, until they reached the regulating button. The knob of the sticker being bevelled at the back enabled it on coming into contact with this button, to raise the end of the swell key gradually, if the great keys happened to be down when the coupler was being drawn.

In the backfall coupler, the different divisions are connected by an arrangement of backfalls and stickers (see Fig. 9 p. 35). When this system is applied to the pedal board, a "splay" backfall is used, so called because the arms are not parallel to each other, owing to the pedals occupying so much more space than the same compass of notes on the manual. A roller board, (as in Fig. 10) answers the same purpose, and is generally pre-

ferred. The "drum-head" coupler is another variety. Wooden circular blocks called drum sticks are hinged on a "stock" (a slip of wood the length of the keyboard) which slides into position between two inclines cut on the top of the Great and under side of Swell keys, filling up the space between when coupler is drawn. Saw cuts are made in the end of the Swell keys, through which a tapped wire passes having a button at the lower end and a loop at the top whereby it may regulated.

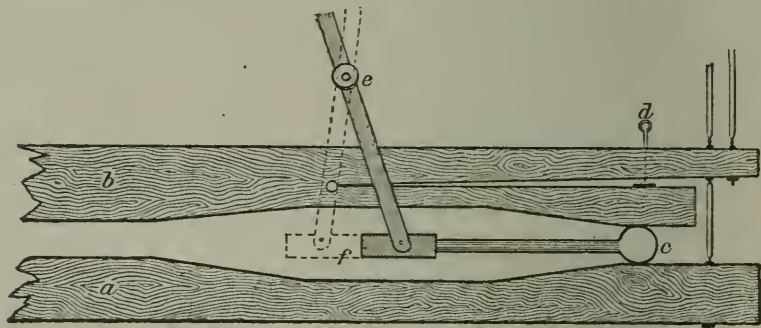


Fig. 14.

Drum-head coupler.

a) Key of Great Org. b) Key of Swell Org. c) Drum-head. d) Tapped wire or screw, with loop or head for regulating (point blunted). e) Iron bar across upper keys, attached at each end to f) the "stock" into which the drum-heads are grafted. The draw-stop action causes the iron roller to turn, and the dotted lines show the drum-heads resting, inoperative, within the hollow cut out from the keys.

There are several other varieties of coupling actions which cannot here be described. One kind, radically different from all these, but more limited in its application, is known to German builders as the "Wind chest" coupler. The stops of both manuals are placed upon the same soundboard, and the wind is admitted through the grooves or cut off at will by draw stop mechanism. Such a system might be applied to Great and Choir of small organs, but, it is obvious, could not be applied to enclosed and unenclosed soundboards such as Swell and Great.

In a large four manual organ couplers will be found connecting each of these keyboards with the pedal, also Swell to Great, Swell to Choir, and Solo to Great. A Choir to Great is often omitted; it is of use, however, in small three manual organs containing a very limited number of 8^{ft} foundation stops. All these manual couplers are

unison couplers, other kinds, adding to resources of an organ, termed *octave* (the "terzo mano" or "third hand" of Italian organs) and *sub-octave* couplers cause the notes an octave above or below to sound, either on their own keyboard or bringing, for example, the octave above or sub-octave of the Swell into effect on the Great keys.

The *sforzando* coupler (first made by Lincoln in 1844) only met with in large organs, acting by pedal, attaches the Great suddenly to the Swell whilst playing on the latter keyboard.

In tracker-work organs the advantages accruing from numerous octave and sub-octave couplers are somewhat counterbalanced by the necessary complications in the mechanism, where (as in chancel positions generally) space is limited. In modern electric organs, however, couplers may be multiplied almost to any extent without this drawback, as in the remarkable organ in Worcester Cathedral, where each of the four manuals has both a "sub" and a "super" octave.

The Tremulant.

The old pattern of tremulant consisted merely of a valve in the wind trunk opened by the wind flowing from the inside. A spring held the valve down, allowing it to open a certain distance, then pulling it back again. Many tremulants work with a flapping noise, and are ill contrived, but various improvements have been made by modern builders. In one improved make, a little box is attached to the wind chest, by a conveyance, having an opening to admit the wind. A small diagonal bellows, about 12 inches by 4½ constitutes the other side of the box. This little bellows is kept down by a spring which forces a small pallet — hinged against the bottom board of the bellows, — open. On the top board of the bellows, (at the hinged end) a hole is cut, but when closed down the air cannot pass out freely. When the pallet is open, the wind rushes in faster than it is able to escape, lifting the little bellows, but the closing of the pallet, and the opening in the upper board let the wind escape until the spring forces the bellows back again, and the automatic repetition of this act causes the more or less rapid fluctuations in the wind supply, which reaches the pipes in a series of shocks or puffs.

In some tremulants, a small sliding weight at the end of a vibrating bar may be shifted so as to quicken or retard the pulsations. The concussion bellows, when there is one, has its function temporarily suspended by the mechanism bringing on the tremulant, to enable the latter to act. It is brought on either by pedal, draw stop, or a knob in the key slip, and the swell is invariably the manual chosen; tremulants to unenclosed keyboards being very undesirable additions. In Dallam's organ, built in 1606 for King's College, Cambridge, there was a "Shaking stop", and "Trimeloes" occasionally figured in Smith's and Snetzler's specifications.

Tubular Pneumatic Action.

This modern development of Barker's invention was shown in an organ at the Paris Exhibition of 1867, Mr. Henry Willis subsequently introducing the system into his rebuild of St. Paul's Cathedral organ. Tubes with compressed air supply the place of trackers, and as turning corners and a considerable distance between the keyboard and the pipes present no longer any difficulty, it is much in favour at the present time wherever the action is not direct, and has much to recommend it for the pedal department of small organs which have the ordinary tracker action for the manuals. Modifications in detail occur in this system as applied by various builders, but the general principles are the same in all, and are as follows:—

The key, being depressed, rises at the opposite end, opening a small valve, letting the wind into a leaden tube at the other end of which is a "puff" valve, connected by wire with a "plunger" or disc, which, in its turn, is connected with another valve in the wind chest, stopping the inside pressure of wind. The movement of this valve allows the motor, — a diminutive bellows placed inside the wind chest, — one underneath each pallet — to exhaust, bringing down the pallet, and allowing, as in the other action, the wind from the wind chest to enter the pipe holes.

The leaden tubes, from $\frac{1}{8}$ to $\frac{1}{4}$ inch in diameter, are easily bent to pass around corners, and may be of almost indefinite length without affecting the resistance offered the finger by the key, whereas obvious inconveniences and complications ensue from a too lengthy tracker action. It is also less liable to cipher, and is noiseless in its

working. The touch is quite distinct from that of the tracker action, and the player has not quite the same feeling of personal contact with his instrument. The tone usually "lingers" a little after the key is released, an advantage, perhaps, in a building which is particularly dead to resonance, but a decided disadvantage when a rapid shake is attempted; for in the tubular action as commonly made, the two notes sound together. The form of tubular pneumatic here illustrated is perfectly free from these drawbacks, and were all tubular actions as perfect, the "tracker" system would undoubtedly be completely superseded excepting, perhaps, for the smallest and cheapest instruments. The illustration is reproduced by permission of the patentee, Mr. J. J. Binns, Bramley, Leeds.

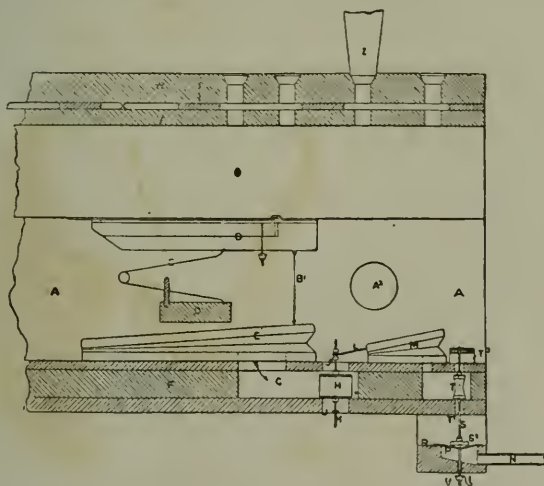


Fig. 15.

The mechanical parts inside the windchest are here shown in section.

A is the windchest constructed as usual, connected to the main bellows by pipe A¹, or wind-trunk, provided with as many channels, O, and pallets, B, as keys, also with springs, C, and spring-rail, D, with a corresponding series of pneumatic bellows, E, upon the coverboard F, through which are suitable channels, G. Within the channels G are a series of solid valves, H, to open and close apertures J, J¹, each having a spindle, K, through the centre. Each valve H is connected at its upper end by arm L to a small exhaust bellows M. The pallets B are

connected to the bellows E by connecting-rod B¹; the tubes, N, from each key are fixed to the hole connected to the small puffs P in the puff-board R. Within each puff is a spindle, S, passing upwards through the cover-board; upon each spindle is a disc, S¹, to raise the valve T in the cover-board, and to open and close apertures T¹ and T² in the top and bottom of the cover-board. Upon the spindles below the cover-board is a button, U, and in the puff-board is an exhaust hole, V. The button U is adjustable so as to regulate the amount of exhaust from puff P. W is the top board, X the slider, Y the table, Z is one of the pipes. The action is as follows: — Air is passed through the tubes N by the movement of the keys which raise the corresponding button valves S¹, lifting their spindles S and closing the apertures T² in the bottom of the windchest A, and opening a similar aperture T in the bottom of the cover-board F, causing the compressed air to escape from the exhaust bellows M, which close, raising the solid valve H in the cover-board F and, closing the aperture J¹ in the windchest A, shuts off the air from the bellows, which immediately close, drawing down the pallet B, which admits air into the channels O, and supplies any of the pipes which are over the channels O. Instead of the puff spindle being operated by the tubes from the keys, electricity may be employed in lieu of the tubes.

The Electric Action.

This is variously applied by modern builders. The system invented by Mr. Hope-Jones is here described, as being exceptionally quick and sensitive in repetition. On depressing the key, an electric contact is effected, which consists of rubbing points. An electric current passes from two or three dry Le Clanché cells through the above mentioned key contact, and afterwards through a flexible cable about 1 inch in diameter, and containing possibly 1000 fine gauge wires of tinned copper. These wires are insulated by a rubber covering, and are so grouped and twisted together as to neutralise the self-induction of the circuits. Within the organ, the wires from the other end of the cable are attached to small magnets specially wound so that no spark results when the electric contact at the key is broken. This magnet attracts a thin disc of iron about $\frac{1}{4}$ inch in diameter, (held up by a high wind pres-

sure from underneath) and draws it downward through a space of less than $\frac{1}{100}$ of an inch.

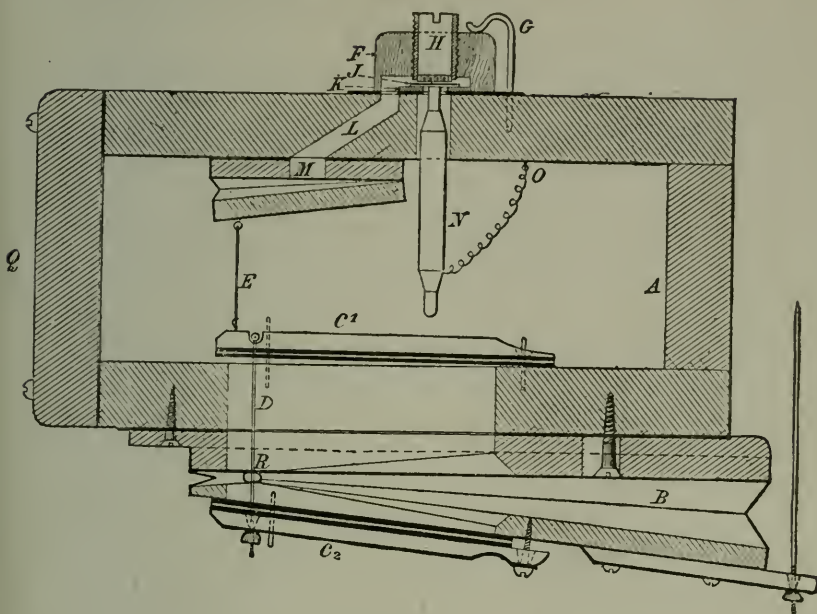


Fig. 16.

The working is as follows:—The box A is connected with the organ bellows and so (immediately the wind is put into the organ) is filled with air under pressure, which passes upwards between the poles of the magnet N. Lifting the small iron disc J, it finds its way through the passage L into the small motor M, thus allowing the movable portion of the motor M to remain in its lower position, the pallet C¹ being closed and the pallet C² being open. Under these conditions, the large motor B collapses and the pull-down P (which is connected with the organ pallet) rises.

When a weak current of electricity is caused to circulate round the coils of the electro-magnet N, the small armature disc J is drawn off the valve-seat H on to the zinc plate K.

The compressed air from within the small motor M escapes by way of the passage L, through the small holes in the valve seat H into the atmosphere. The compressed air in the box A then acts upon the movable portion of the small motor M in such a manner that it is forced upwards and caused (through the medium of the pull-wire E) to lift the supply pallet C¹ and close the exhaust pallet C²,

thus allowing compressed air to rush from the box A into the motor B and so cause this latter motor to open and (through the medium of the pull down P) to pull the soundboard pallet from its seat and allow wind to pass into the pipes.

The valve-seat H has formed on its lower surface a large number of minute bosses, each pierced with a very small hole. A very slight movement of the armature disc J, therefore, suffices to open to the full extent a large number of exhaust passages. The movement of this disc is reduced to something less than the $\frac{1}{100}$ part of an inch. It is, therefore, always very close to the poles of the magnet, consequently a very faint impulse of electricity will suffice (aided by gravity) to draw the disc off the valve-seat H. The zinc plate K, being in intimate contact with the iron poles of the magnet N, protects the latter from rust by well known electrical laws. The cap F is made of teak, with the grain running perpendicularly, so that no change in the weather can affect the relative position of parts. R is the point at which the large motor B is hinged.

The drawstop action resembles the key action with respect to the magnets, armature discs and primary pneumatics; the secondary pneumatics are of larger size. Each stop-action has two magnets, one lets the wind operate upon one side of the secondary motor (which moves the slider), and the other lets the wind act upon its opposite side. The circuits being automatically broken, no current flows except for the fraction of a second when the stopkey is moved either on or off.*

PART III.

Practical.

Technique of the Keyboard.

No one should attempt the organ without a fair acquaintance with the piano. The piano works of Bach are invaluable as aids to the organ student. It will be sufficient here to mention the following:—

* Students desirous of further information with regard to various applications of electricity to organ building are referred to the "English Mechanic and World of Science" for August and September 1896.

- Petits Preludes et Fugues. Ed. by
 Buonamici (8011 Aug. Ed.)
 15 Two part Inventions. Ed. by
 Buonamici (8018 Aug. Ed.)
 15 Three part Inventions. Ed. by
 Buonamici (8019 Aug. Ed.)
 48 Preludes and Fugues.* Ed. by
 Czerny (1 and 2 Peters Ed.)

Pedals attached to the piano are also recommended for home practice. The old notion, — dating from the days when piano touch was extremely light and organ touch very heavy, — that organ practice was injurious to pianists has long since been proved a fallacy; the one instrument acts as a corrective for the faults commonly engendered at the other. The pianist learns at the organ to be more careful as to the exact duration of notes; the organist retains his feeling for time, rhythm, and accent, and acquires rapidity of finger through piano practice.

Organ Touch.

The keys must be pressed down firmly and steadily, with the finger joints bent so that the first joint of each finger descends perpendicularly. If the fingers hesitate for a moment, resting on the surface of the keys without pressing them down instantaneously, a disagreeable whimpering sound is produced owing to a little wind being admitted into the pipes (through the slight movement imparted to the pallet), but not sufficient to produce the proper tone.

Overlapping of the notes, i. e. letting the fingers lie on the notes last played in scale passages etc. so frequently observed in faulty piano playing, becomes speedily corrected at the organ; for this and other reasons its study is highly recommended to pianists by Schumann and other great musicians as an invaluable aid to a good legato style.

Fingering on the Organ.

The necessity for binding the tones closely together, and the absence of anything analagous to the convenient

* Riemann's "Analysis of Bach's 48 Preludes and Fugues" (9205—9206 Aug. Ed.) may be profitably read in connection with the above.

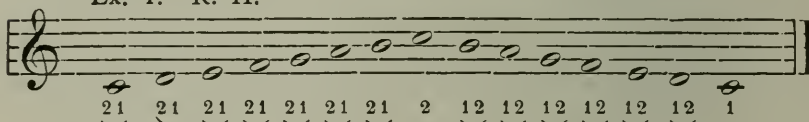
right pedal of the piano for prolonging the sound of notes which the fingers have left, have caused some important modifications of fingering on the organ. This subject must engage the student's attention at an early stage, and it is recommended that exercises of the following description be practised alternately, by way of relief, with the earliest pedal exercises.

Substitution of Finger.

The following exercises must be played slowly; but, however slowly the notes are played, *the finger or fingers relieving those first pressed down must do so as rapidly as possible*. During the change, the key must not be allowed to rise partially, but the player must feel that it is depressed to its utmost limit all the while.

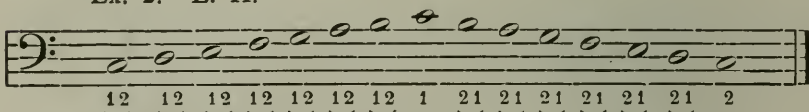
Draw a soft 8^{ft} on each manual, Clarabella or Gedackt, Salicional or Dulciana, with Sw. to Gt. or Sw. to Ch. coupler, — so that from the first the touch may be adjusted to the extra pressure which is demanded by the coupling action.*

Ex. 1. R. H.



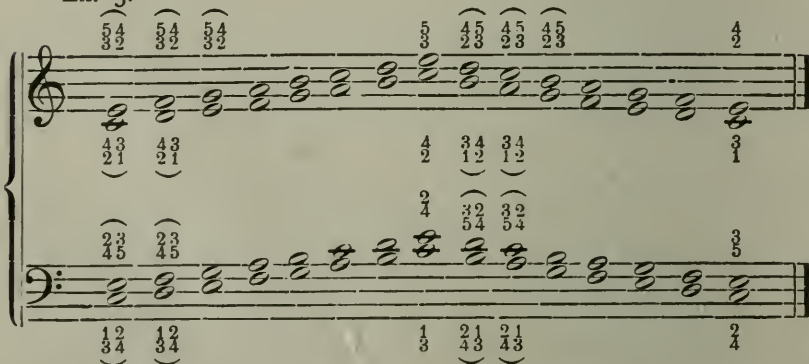
Then with the other fingers, 2, 3, — 3, 4, — 4, 5 in like manner.

Ex. 2. L. H.



Then with the other fingers, 2, 3, — 3, 4, — 4, 5.

Ex. 3.



* Unless the organ happens to be a modern one with electric or pneumatic action the couplers of which add nothing to the key resistance.

These, and the following exercises should also be transposed into a few keys utilising the raised notes.

Ex. 4.

Ex. 5.

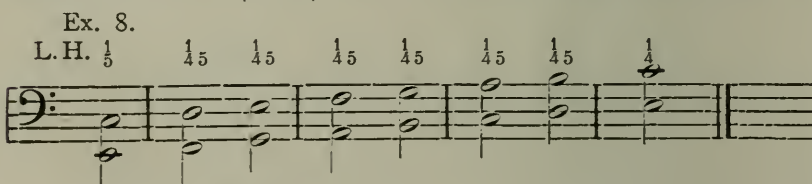
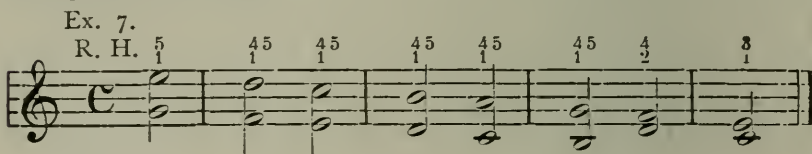
Ex. 6.

More extended examples of this kind of fingering will be found in the manual exercises of every good organ instruction book.

Use of the thumb on consecutive notes.

Not only is it necessary at times to slide a finger or the thumb from a black key to the next white one, with more frequency than is usual in piano playing, but the thumb may be passed from one white key to the next white one, a device peculiar to organ playing, and occasionally of great service. The under side of the thumb, to the first joint, is bent as far as possible over the next key, the wrist being depressed slightly below the level of the keys and raised again as the thumb joint, with a rapid movement straightens itself out upon the key.

This, of course, applies to descending passages in the right hand and ascending in the left; the reverse process being not so easy.



Similarly, the thumb may also be made to slide from a white key to a black one, instead of lifting it entirely from the key as in piano playing.

Playing on two manuals simultaneously with the same hand.

When the keyboards are not too wide apart, and overhang each other conveniently (as they should do) it is practicable to sustain a note on one keyboard with the little finger whilst the thumb or index finger plays melodic phrases on the keyboard below. Or the thumb may sustain a note whilst the rest of the hand is upon another keyboard. The following examples are given for the student's information, not for practice at an early stage:—

Ex. 8.

Allegro Cantabile (5th. Org. Sym.)

Sw. (Clarabella)

C. M. Widor.

Gt. *pp*
 Choir
 8 & 4 ft.

The score consists of three staves. The top staff is in treble clef with a key signature of two flats and a 2/4 time signature. It contains a melodic line with a *pp* dynamic marking. The middle staff is in bass clef with the same key signature and time signature, containing a rhythmic accompaniment. The bottom staff is also in bass clef with the same key signature and time signature, containing a simpler rhythmic line.

Ex. 9.

"Angelus", J. Massenet

Ch. soft 8 & 4 ft.

arr. by Smallwood.

Open Dp. Gt. 1
 Diaps. and
 Oboe Sw.

Bourdon 16 ft.

The score consists of three staves. The top staff is in treble clef with a key signature of two flats and a common time signature. It features a complex melodic line with fingerings indicated by numbers 1, 2, 3, 4, 5. The middle staff is in bass clef with the same key signature and time signature, containing a harmonic accompaniment. The bottom staff is also in bass clef with the same key signature and time signature, containing a simple bass line.

Guilmant's "Cantilene Pastorale" is another well known instance, — impossible of execution as written on many old organs.*

* The Royal College of Organists' resolutions and recommendations on this point are to the effect that the overlapping be $1\frac{1}{2}$ inches, that the height from the upper surface of a white key on one manual to that of the next manual below should never exceed 3 inches, and that no key slip be inserted.

The "Prolongement Harmonique", a modern invention for enabling the player to fix at will any notes, a voluntary "cipher", in fact, — leaving the fingers free for the other keyboards, would be found useful sometimes. For example, in Dubois' "Marche des Rois Mages" an inverted pedal note, — B above the treble clef, — (supposed to represent the "Guiding star") is held down, with few intermissions throughout the piece on the Swell (4th flute and 2nd), the player being directed to place a weight upon the key.

The Art of Pedalling.

The seat should be of a convenient height, so that the player will not have to stretch the feet down too far to reach the pedals, or rest them in an uncomfortably flat position on the long keys. This is extremely tiring to the player, and organs are sometimes met with, where, owing to the manuals and pedals being brought too close together there is no alternative between such discomfort and hindrance to the free movement of the ankle joint, and that of raising the seat so that the hands are too high over the manuals.* The distance of the organ stool from front to back must be regulated with regard to the convenient playing of the short keys. No exact rule can well be given, as bodily proportions vary.

In the first attempt at using the extreme ends of the pedal board, — especially when the left foot has to follow the right nearly to the top, or the right foot has to descend to the lower notes, — the student will feel as though he were falling forward, or slipping off the seat. Though at first it may appear necessary to rest one hand on the seat or console, practice gradually enables the player to render with apparent ease rapid pedal passages from one end of the pedals to the other, with the arms folded, and without shifting up and down on the seat. A good player will be noted for the ease and smoothness of his pedalling, and the grotesque contortions and wriggling of the body sometimes witnessed are quite superfluous.

* The Royal College of Organists advises 32 inches as the distance from the upper surface of the Gt. Org. natural key immediately over the centre of the pedal board, to the upper surface of the centre natural key of the pedal board.

The signs generally used to indicate the pedalling are as follows:—

∨, ▽ or t, the toe

U, □ or h, the heel

χ, λ (λ, ch or RL, LR change the foot on the note
 are played by the same foot, toe and heel.

When the above signs occur over the pedal staff they apply to the right foot; when below it to the left. By some writers the letters r, l (right, left) are used, placed below the staff.

Points to be especially observed:—

1. Do not shift from the centre of the seat in order to reach the notes at the extremities of the pedal board, or the mental impression of the relative distances or position of the notes becomes confused, which is fatal to the attainment of certainty in pedalling.

2. Being once correctly seated, on no account look at the pedal board when playing.

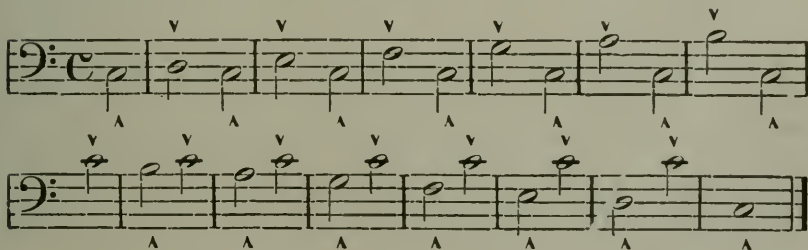
3. The pedals must be pressed down firmly, not struck; on releasing each note, do so gently without an abrupt jerk. If the first part of this direction is not attended to the large pipes will often speak imperfectly. Reed stops especially show up faulty and irregular pedalling. Lifting the foot abruptly is the cause of much unnecessary noise from springs and pallets.

4. The left foot passes behind the right on the long keys.

The First Pedal Exercise.

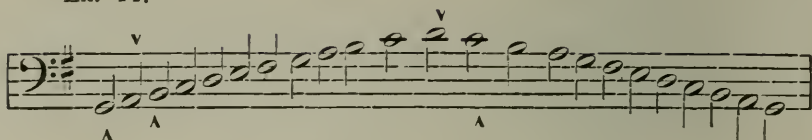
Drawing the Bourdon with a soft pedal stop of 8^{ft} pitch, and with either of the manuals coupled to Pedals, (so that the student may see upon the keys in his first attempts the notes played), our first exercise will be:—

Ex. 10.



Transpose the above an 8^{ve} lower, then into several different keys.

Ex. 11.

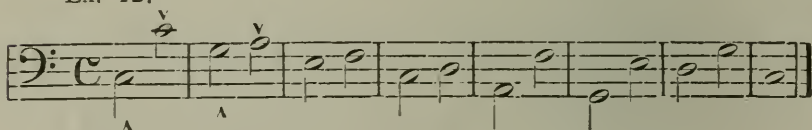


For the f^{\sharp} the left foot must pass in front of the right, resuming its place behind again on the a. In quick passages the e and f^{\sharp} would be more conveniently played by the heel and toe of the right foot, and the top two notes c and d in the same manner, but it is desirable in the earlier exercises to be well practised in the use of the toes alternately.

Transpose Exercise 11 into c, d, f and b^{\flat} .

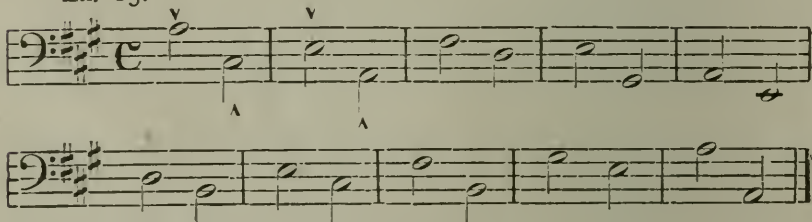
Exercises for finding various intervals; to be played very slowly, the notes not guessed at, but only pressed down when the student is fairly certain his foot is over the right note: —

Ex. 12.



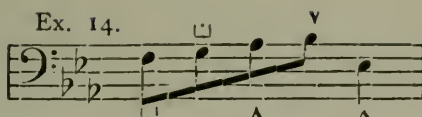
Transpose into d, e and b^{\flat} .

Ex. 13.



Transpose into a^{\flat} , b^{\flat} and g.

Although in pedalling by alternate feet the toe is the part used, cases will present themselves when the heel may be substituted to facilitate quick pedalling, by lessening the movement the feet have to make in passing to their next notes respectively, as in the following example: —



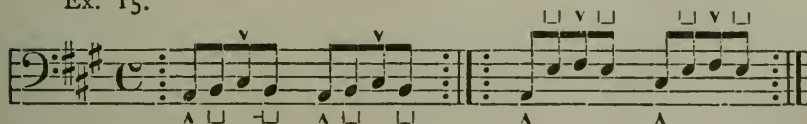
The alternate use of right and left foot forms the basis of good pedalling and must first be acquired. "Toe and heel" playing is termed by the German organists "artistic pedalling". Our narrower scale pedal boards; the radiating principle (now happily being abandoned), and the seductiveness of the Swell pedal, have doubtless led to its greater development with us. Merkel, in his *Organ School* remarks "there is always a danger that an excessive, sluggish and unskilful use of this manner of pedalling will entail indistinctness and rhythmical uncertainty". On this ground also, the use of the toe and heel should not be begun until a suitable number of exercises supplementing Nos. 10 to 13, have given the student some degree of firmness and certainty.

Freedom of the Ankle Joint.

Just as on the manuals one must be able to play freely from the wrist without using the weight of the arm, so on the pedals the keys are not pressed down by the whole weight of the leg, but by a free movement of the ankle joint.* Bearing this in mind, any convenient pedal note may now be played several times in succession, by the toe of one foot, afterwards by the heel, to attain flexibility.

The natural inclination of the feet is, of course, in an outward direction, but it is sometimes necessary to turn the toes inward, as in Exercise 16. To give the ankle joints the requisite flexibility, such exercises as the following are practised:—

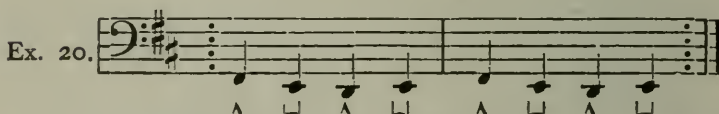
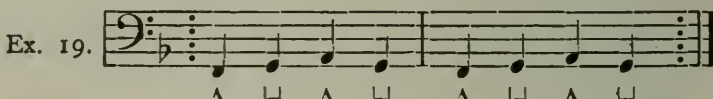
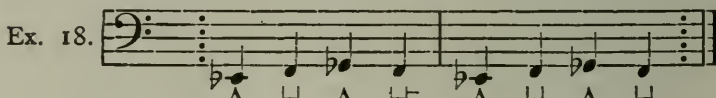
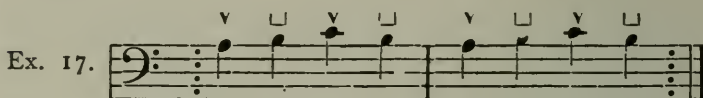
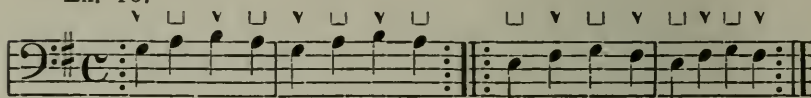
Ex. 15.



* Laced boots, if thick and clumsy, greatly hinder this movement; Lady students should eschew high and narrow heel pieces.



Ex. 16.

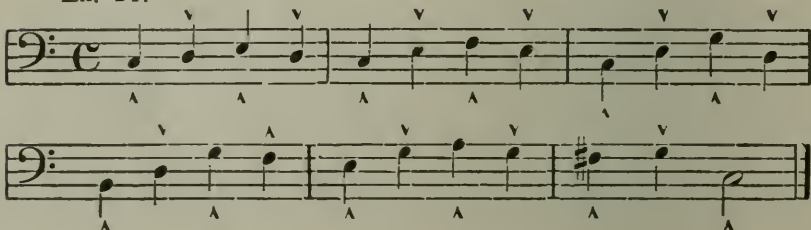


It should here be observed that Ex. 16—20 are intended solely for the attainment of flexibility on the part of the ankle joints. In playing difficult arrangements such exceptional pedalling is often required if the Sw. pedal or composition pedals are to be used with proper effect.

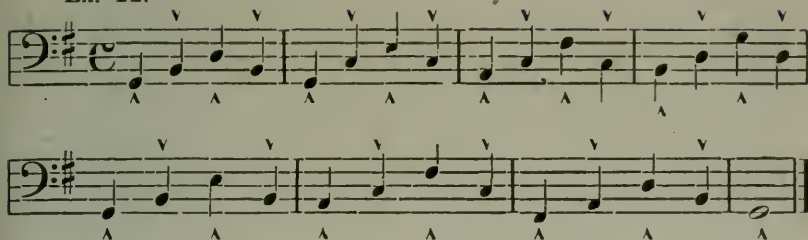
Passing one foot behind the other.

In the following exercises the right foot is placed a little nearer the short keys than the left, which must pass behind it except in bars 3 and 6 of exercise 22, where the left foot reaches the short key $f\sharp$ by passing in front of the right.

Ex. 21.



Ex. 22.



Changing the feet on a note.

When the time is not too quick, such passages as the foregoing are frequently played by changing the feet. Such changes, as in substitution of finger, must be effected quickly, the left foot passing behind the right; the toe of the right foot being more pointed to make way for the left. Changing on the short keys is somewhat difficult, and on some inconvenient pedal boards not very practicable.* It is sometimes unavoidable, if a good legato is to be maintained, as in the following examples. It also becomes necessary when it is desired to relieve the foot which can most conveniently reach a composition pedal, (the use of which may be required, as at the end of a movement), the pedal note being a short key. The toe to be replaced must be brought nearer the knee panel to allow space for the other to be placed behind it.

Exercises 21 and 22 may be utilised for practising changes on the long keys, the change being effected on the 3rd and 4th crotchets of each bar. For changing on short keys, practise the scale of f# major, one octave, changing on each note except the key notes at the bottom and top.

Skipping intervals with the same foot.

It is convenient at times to skip a minor or even a major third, as at the beginning of Exercise 23, with the same foot. Like toe and heel playing generally, this is more convenient at the upper and lower ends of the pedal

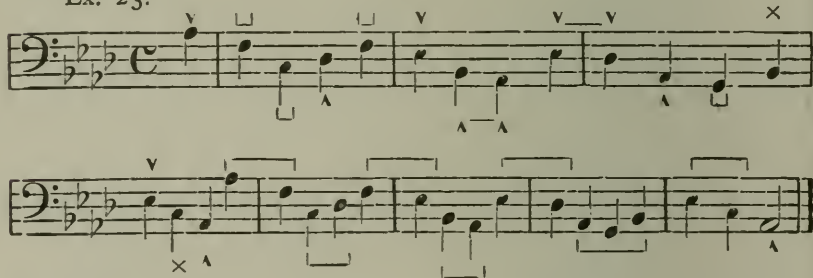
* To facilitate changing on a short key, it was suggested at the College of Organists' Conference in 1881 that the back of the short keys be slightly raised, but the proposal remained unembodied.

board, for the right and left foot respectively, than in the middle.

Playing two adjacent short keys with the same foot.

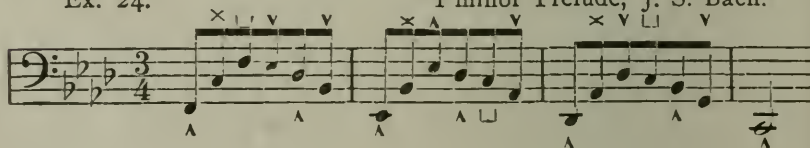
This is done by passing the toe, or rather the broader part of the foot, from one side to the other on the two keys. The short examples which follow embody the various points just enumerated, also two different systems of marking the pedalling, with an alternative method for the last two bars (compare with bars 3 and 4). The first system shows the use of toe and heel more minutely, but the second is simpler, and is recommended for adoption by those who understand the general rules which govern pedalling. As the heel is never used on the short keys, the intention, even in such a troublesome passage as this, is quickly comprehended, and the marks catch the eye at once. The separate signs will, of course, be needed when it is desired to indicate pedalling by alternate toes as in the earlier exercises.

Ex. 23.



Ex. 24.

Fminor Prelude, J. S. Bach.*



Organ Trios.

When the student has acquired a fair knowledge of the pedals (and the attainment of facility upon the pedals *when used alone* is not so very difficult), a suitable selection

* Vol. I of Bach's organ work, Best's Edition (Aug. Ed. 9801).

of easy trios for 2 manuals with pedal should be made. The real difficulties to be surmounted in organ playing become apparent when both hands and feet are engaged in music of contrapuntal character, involving much contrary motion between the left hand and pedals. When first combining hands and feet students need to be particularly watchful over the fingering of the left hand, as it is only too likely to become involuntarily disturbed by the pedal part.

A sufficient number of preparatory studies such as the following must be practised with one hand and pedals only, before combining the three parts:—

Ex. 25.

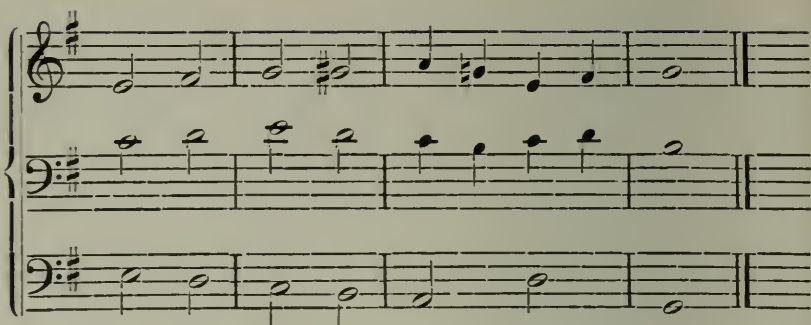
I.

II.

Ex. 26.

I.

II.



Rinck's 3 part studies should now be practised (Augener Edition, 9545a).

In organ trios, three different qualities of tone, but about equal in distinctness, are selected on manuals and pedals, and the three parts are of equal importance from a melodic point of view. The manuals not being coupled, the parts pursue their way independently; often crossing, the tone remaining distinct. Of modern trios Rheinberger's 10 Trios Op. 49, Merkel's 4 Trios Op. 39, and one in E by Smart, are recommended for practice. The most important are the six "Sonatas" of J. S. Bach, and their contrapuntal character renders them far more difficult of execution than many fuller sounding works whose effects are gained chiefly by full chords. It must be for the teacher to make a selection suited to the student's technical attainments. A few suggestions are here given as to registration, which may need some slight modification on different organs:—

	Sw.	Gt.	Ch.	Ped.
(A)	Gedackt and Oboe or Gedackt and Gamba with Sw. 8 ^{ve} coupler.*	Clarabella only.	Gedackt and Dulciana (and Wald Flute).	Bourdon and Bass Flute (or coupled to one of the 3 manuals not used).
(B)	Open Dp. Gedackt Gamba and 4 ^{ft} .	Gamba and Flute or 2 softest 8 ^{ft} .	Clarionet and Ge- dackt.	Bourdon and Violon- cello.

* Left hand part, as the right may ascend higher than the 8^{ve} coupler takes effect.

	Sw.	Gt.	Ch.	Ped.
(C)	Sw. Dia- pasons and Horn.	Clarabella and Gamba or 2 nd Open Dp.	Violin Dp. Gedackt and Dulciana.	Bourdon, Violon- cello and Bass Flute (or Open Dp. and 8 ^{ft} .)

An effective pedal may be got by drawing the 16th of one of the manuals with one of 8th and coupling that manual to the pedals, without drawing any pedal stops, as for instance, the Contra Fagotto, L. Bourdon, and Gedackt of the Swell, with the hands on the other manuals or an 8^{ve} higher on the one thus coupled. It is much to be wished that one or two soft Swell Pedal Basses such as the above were to be generally found, attached by duplication to the Pedal department, *leaving the Swell key board free for any other combination that may be desired.* With the application of tubular pneumatics, on Messrs. Brindley & Foster's "Metechotic" system, or after Mr. Casson's plan it is quite feasible.

Pedal Solo.

Sometimes the pedal has assigned to it solo passages of many bars; by "pedal solo" the pedal alone is here understood. In Bach's great Toccata in F, there are Pedal solos of 26 and 32 bars in semiquavers, and in Guilmant's well known organ Sonata No. 1, the vigorous first subject of the first movement, (after the introduction), is given out in this manner, the first 19 bars for the pedals alone.

Melody assigned to the Pedals.

The melody is sometimes given to a pedal stop, whilst the left hand part is, in effect, mostly below the pedals. In the following extract from a Choral Prelude by Bach the top F \sharp is written for. Although the pedal range in Bach's time rarely exceeded D, there was built in 1708 for the Lutheran church at Cöthen an organ with pedals extending to F \sharp . In 1717 Bach was Kapellmeister there, and the prelude dates from this period. On other organs it became necessary to transpose the pedal part an 8^{ve} lower, using a 4th stop of melodic character. On most English organs it can only be played as intended by coupling the 4th Flute of Great or Choir.

Ex. 27. (Canon in the 8ve).

Choral Prelude, "In dulci jubilo", J. S. Bach.*

(8ft. Pedal).

Ex. 28.

Cantilène. A. Mailly.**

V. Céleste Sw. {

Bass Fl. 8ft. p

* No. 12, Vol. XVII Bach's works ed. by Best, Augener Edition No. 9817.
 ** Book XXI "Cecilia", Augener Edition No. 8721.

A good Bass Flute 8^{ft} or a really characteristic Violoncello 8^{ft} are invaluable; in fact, both are on this and other grounds, indispensable to a complete 3 manual organ, whilst one at least, should be found in ordinary two-manual instruments. For power an 8^{ft} Principal is often chosen, but for melodic purposes it is not so useful.

Pedal in Octaves.

The pedal part is sometimes played in octaves when an especially bold and powerful bass is desired. If the organ contains a "Pedal 8^{ve} Coupler" it will of course give the same effect when single notes only are played.

Ex. 29.

Var. IV.

Variations on a theme
of Handel's by F. Lux. Op. 52.

The musical score for Ex. 29, Variation IV, consists of three staves. The top staff is labeled 'Clav. I. f' and the bottom two staves are labeled 'rit.'. The music is in G major (one sharp) and 2/4 time. The first staff has a treble clef, and the second and third staves have bass clefs. The music features a series of eighth and sixteenth notes, with a repeat sign in the middle of each staff. The bottom two staves show the pedal part in octaves, with a 'f' (forte) marking at the beginning and a 'rit.' (ritardando) marking at the end.

In variation V of the same piece, the pedal part is in 8^{ves} (semiquaver triplets) throughout.

Double Pedal.

Two independent parts are sometimes assigned to the pedal, a very fine example of which is found in Bach's Prelude on the Chorale "By the waters of Babylon": —

Ex. 30.

Choral Prelude "An Wasserflüssen Babylon". J. S. Bach.

The "drone bass" in the middle section of Guilmant's "Tempo di Minuetto" is thus treated with characteristic effect: —

Tempo di Minuetto, A. Guilmant. Op. 45.

Ex. 31.

p
Ch.

Ped. Soft.
16 & 8 ft.
uncoupled

In the same composer's "Chant Seraphique" (which follows a "Marche Funèbre"), the right foot plays the melody on an 8ft Violoncello and Flute 4 Ft. (which may be got by coupling the Choir Flute to the Pedal) coupled to the Swell, whilst the left foot plays the real bass in detached notes; arpeggio passages being divided between the two hands.

Occasionally three pedal notes are put down simultaneously for a special effect, though such instances are rare: —

Finale, Guilmant's 1st. Organ Sonata.

Andante maestoso.

Ex. 32.

Shake on the Pedals.

Sometimes a prolonged shake is made on the pedals (as in the "Marche Funèbre" just quoted), which contains one on the lower g and f# lasting through ten bars fff. On a large and powerful organ the resultant shocks of sound are too overwhelming for the nerves of many people. One celebrated organist of modern times, G. Merkel, in teaching organ pieces containing pedal shakes, invariably desired them to be disregarded.

On the Art of Combining the Stops.

The 8th Foundation stops are the solid basis upon which the manual stops are "built up" and are, consequently, more in number, and more pervading in tone than those of any other pitch. On the pedal, the 16th pitch predominates. Stops of the Open Diapason class are the most decidedly representative of genuine organ tone, and the Great Open Diapason, — the chief foundation stop of

the chief manual — must therefore be regarded as the most important stop in the organ.*

Although organs differ widely in tone character and in the blending of the various stops, owing to a variety of causes, — differences in voicing, materials employed, amount of wind pressure used, size and acoustic properties of the building, and the position in it occupied by the organ, — yet certain general principles are observed by all good players, and it will now be of service to give a specification of an ordinary, well balanced 3 manual organ containing the stops usually met with, and consider the following remarks on stop combinations with reference to it.

Great Organ. CC to G.

1. Double Diapason 16 ft. tone
2. Open Diapason 8 ft.
3. Open Diapason
No. 2 (or Gamba) 8 ft.
4. Clarabella 8 ft.
5. Principal 4 ft.
6. Harmonic Flute 4 ft.
7. Fifteenth 2 ft.
8. Twelfth $2\frac{2}{3}$ ft.
9. Mixture 3 ranks
10. Trumpet 8 ft.

Choir Organ CC to G.

1. Violin Diapason
or "Geigen Principal" 8 ft.
2. Lieblich Gedackt 8 ft. tone.
3. Dulciana or Salicional 8 ft.

4. Wald Flute 4 ft.
5. Clarionet 8 ft.

Couplers.

1. Sw. to Gt. 2. Sw. to Ch.
3. Sw. 8^{ve}. 4. Sw. to Ped.
5. Gt. to Ped. 6. Ch. to Ped.
- Tremulant to Sw.

Swell Organ. CC to G.

1. Lieblich Bourdon 16 ft. tone
2. Open Diapason 8 ft.
3. Lieblich Gedackt 8 ft. tone
4. Gamba 8 ft.
5. Voix Celeste (to
Tenor C) 8 ft.
6. Principal or Gems-
horn 4 ft.

* Attempts have been made (in order to supply village churches with an organ at as little cost as possible) to erect small organs containing an Open Diapason only. But, besides the monotony resulting from one inflexible *mf* or *f* degree of tone, a stop of 8 ft pitch, — or any number of the same pitch, — will, owing to well established acoustical laws, be found to lack brilliancy, and the assertiveness necessary for maintaining a body of voices in tune. Under "Positive Organ" in the Glossary will be found a description of the cheapest kind of small organ really advisable.

7. Fifteenth or Flageolet	2 ft.	2. Bourdon	16 ft. tone.
8. Mixture 3 ranks		3. Violoncello or Principal	8 ft.
9. Oboe	8 ft.	4. Bass Flute	8 ft. tone.
10. Horn	8 ft.	5. Trombone	16 ft.
11. Contra Fagotto	16 ft.		
12. Clarion	4 ft.	8. Composition Pedals.	
Pedal Organ CCC to F.		4. Combination Pistons to Gt.	
1. Open Diapason	16 ft.	4. " " to Sw.	
		4. " " to Ch.	

In the above organ, the Choir Dulciana and Swell L. Gedackt will represent the softest *pp* effects obtainable on their respective manuals. For a light *piano* combination on the Choir, the addition of the Ch. Gedackt and Wald Flute will give a quiet and unobtrusive support to voices, with Bourdon and softest 8 ft. on Pedal, or Bourdon coupled to Choir. The Choir Diapason being added, will represent about *mf*.

On the Swell the Gamba, Open Diapason, Principal or Oboe (perhaps both*) would be successively added to afford a similar amount of support.

On the Great organ an *mf* will probably be attained by a couple of stops only, — the Clarabella with the 2nd. Open Diapason (or Gamba). A light and clear effect can often be got by using a 4 ft stop, of mellow tone, with only one 8 ft; such as Gt. Clarabella and Flute, or Ch. Gedackt and Flute.

The Swell 2 ft stop will be found most useful if a certain subdued brilliancy is desired, or if voices still flatten when the 4 ft stop is drawn. For a rich, reedy effect, the Oboe and Horn are used with the Swell Diapasons only. For a more powerful and reedy tone, add the Swell 16 ft and 4 ft reeds. The Lieblich Bourdon and the Contra-Fagotto impart depth and richness; the Mixture, brilliancy. The Voix Celeste is used for special effects with the Gamba, and is not added to the Full Swell, nor made to "draw" on the composition pedals in grouping the stops.

* The Oboe tone is much more distinctive without Principal or Open Diapason; in some organs the Principal does not blend very well with the Oboe in *mf* effects.

On the Choir, the Clarionet is treated as a solo stop. It may be used alone, or with the Gedackt to give a little "body" to it, according to taste. Unlike its orchestral prototype, it is seldom pleasing in chords, even in two parts only.

The Great Organ will be similarly treated to the Swell, the Clarion being the last stop added for brilliancy and power. The 12th requires the 15th to "cover" it or the highest sounds heard will be a fifth above the Principal or Flute. The two last named stops sometimes tend to neutralise each other, and, against three or four 8^{ft} it will be preferable to use only one 4^{ft}; — the Principal for brilliancy and power, the Flute for a more mellow effect, and a less obtrusive brightening up of the foundation tone.

The Pedal Organ.

The most generally useful stop is the Bourdon, which is best combined with a soft 8^{ft} pedal stop if the organ contains one, or coupled to one or two soft 8^{ft} on Choir or Swell. The tone is thereby defined more clearly, and bound more closely to that of the manuals.* The smallest two manual organ with one 16^{ft} on the Pedals should contain also an 8^{ft} pedal stop, which might in such cases be borrowed from the Bourdon, needing only an additional upper 8^{ve} of small stopped pipes to complete it.

The 16^{ft} Open Diapason will add great depth and fulness to the tone, and the pedal reed (which is never used without some if not all of the other 16^{ft} stops) adds richness and weight. An 8^{ft} pedal stop is sometimes used alone with good effect, and in some compositions an effective solo is assigned to an 8^{ft} pedal, when a good Violoncello or Bass Flute is found most useful.

A Double Open Diapason, or Sub-Bourdon of 32 foot pitch will only be found on large organs. When drawn alone, the deeper notes are felt rather than heard as a

* Extraordinary mistakes have sometimes been made in designing large organs with several pedal stops, all, or nearly all being of 16^{ft} pitch, to the neglect of those of 8^{ft} pitch; the natural result being a "bottom and top" effect giving an actual impression of less power (because less incisive) than if a due proportion had been observed between the 16^{ft} and 8^{ft}.

distinct musical note, but in combination with the 16^{ft} Open Diap. and Bourdon, a stop of 32^{ft} pitch gives great grandeur and depth to the pedal organ. A substitute for it, the Quint, giving in some situations a somewhat similar acoustical effect from pipes 10²/₃^{ft} at the lowest C is sometimes met with in organs of moderate size.

A 32^{ft} reed, Contra Posaune will only be found on large organs containing a Double Open Diapason or Sub Bourdon, or both. A solitary instance of a 64^{ft} reed occurs in the organ built by Messrs. Hill for the Town Hall, Sidney; its effect in combination is said to be like that of kettledrums. The organ in Worcester Cathedral, built by the Electric Organ Co. on Mr Hope-Jones' system, contains on the pedal a 64^{ft} of wood, named "Gravissima;" the lower octave, however, is resultant.

Organ Tone.

Organ tone may be summarized into four general types or qualities: each class, however, being capable of considerable modification or fusion into one of the other types, in the hands of artistic voicers.*

1. The Diapasons. The bold, round, and pervading yet smooth tone of this class of stops is quite peculiar to the organ. Useful alike in full harmony and in solo passages (more especially in the tenor) they are the very foundation upon which the whole superstructure of reed, mutation and mixture stops is reared.

2. String toned stops. Under this head come first the various Gambas, and the Violin Diapason or "Geigen Principal", the Gemshorn, and, on the pedals, the Violone and Violoncello of 16^{ft} and 8^{ft}.

3. Flute toned stops. The Harmonic Flute, Wald Flute, Suabe Flute, Lieblich Flute, Lieblich Gedackt, Stopped Diapason and Clarabella are all more or less representative of this type.

* As an instance of what is possible in this direction, it may be here mentioned that, although wood pipes have quite a distinct quality of tone from metal ones, skilful voicers pride themselves upon being able to make the tone of pipes constituted of one material so closely resemble that of pipes made of the other, that no difference, or break is perceptible when the bass portion of a stop is of one material and the treble of the other.

In some large organs striking effects may be got by grouping together (through couplers) several stops of string tone on the same manual, and using them alternately with 8^{ft} and 4^{ft} of flute quality. These two classes also blend exquisitely.

4. Reed Stops. These are mostly imitative of orchestral instruments of the same name, and frequently in a good Oboe or Clarinet the resemblance is remarkably close.

The first reed stop usually placed in small organs is the Oboe. When used as a solo stop the Gedackt is generally drawn with it, to modify the comparative roughness of the reed and to give body or to help the tone. Accompany on the Choir Gedackt, or, (if a two manual), the softest Great 8^{ft} stop, which will probably be a Dulciana.

The Horn, a stop of bolder tone, though next to the Oboe the most useful Swell Reed, is not by any means to be regarded as a good imitation of the round, pure and luscious or cloying tone of its orchestral namesake, which is *not* a reed. When used as a solo stop, it will bear all the other 8^{ft} foundation stops being drawn with it, without marring its distinctive quality. In playing arrangements from orchestral works, a much nearer resemblance to the orchestral Horn may be got from a thick, full toned Clarabella, or a smooth, quiet second Open Diapason.

The Trumpet adds power to the full Great Organ, but is also sometimes used for solo passages, and in chords, when one or more of the Gt. Diapasons should be drawn with it. When thus intended to give a distinctive coloring, like the orchestral Trumpet, diatonic progressions are best suited to it, but when used in the full organ this is not taken into account with regard to the chromatic nature of any passages which may occur.

Reed stops more than any other kind possess the property of drawing the listeners' attention to the particular spot from whence the sound emanates; whilst the Diapasons—especially the pedal flue pipes—pervade the building.

Use of the Manual 16^{ft} Stops.

Many charming effects may be obtained by using a 16^{ft} stop with one of 8^{ft}, and playing an octave higher, as for example Sw. L. Bourdon and Gamba, or L. Bour-

don and Gedackt, or Bourdon, Oboe and Contra Fagotto; and on the Great, the Double Diap. with Clarabella or Gamba.

In accompanying voices, manual doubles must be sparingly employed; generally only when the Full Swell or Full Great is required. Often in fugal "leads" the effect of a double is unpleasant, though no exact rule can be given. Much must be left to the judgment of the player, as the size of the building and the prominence of the particular 16^{ft} stop in question must be taken into account. In the Messiah Chorus "Worthy is the Lamb", for example, at the words "Blessing and honour" all the doubles in the organ might be used with good effect in unison with the pedals; but at the treble lead which follows the effect would be very bad, sounding just as disagreeably as though one voice sang the part an octave lower than the other members of the chorus. But directly the other voice parts are again engaged the doubles may be used with full Swell or full Great with good results. It will be understood, therefore, that when it is necessary to play any chorus part singly (except the bass) for the benefit of one section of the choir, whilst stops of 4 and 2^{ft} pitch may be added if desired, doubles must be excluded.

A Swell Bourdon is often effectively used with the full Swell *minus* the reeds.

Doubling or thickening the parts.

The study of harmony and counterpoint is essential to all who desire to play the organ well, as it is necessary to know which parts may be doubled with good effect when accompanying with several stops, — it may be of acute pitch, — drawn. And *per contra*, to avoid a thick, turbid effect when using the manual doubles, a re-arrangement of the parts is often required when the tenor and bass parts both lie rather low. Judiciously used, the manual doubles add dignity, but their continual use causes voices to flatten, as the more definite and incisive tones are partially obscured by the admixture.

Balance of Tone between Manuals and Pedals.

If the student is fortunate enough to have the use of an organ with several pedal stops, considerable discretion

must be used in selecting an appropriate bass to any given manual combination. Speaking generally, the Bourdon with one pedal 8^{ft} will form the most suitable bass for the Choir organ, for the Swell up to *mf*, and for the softer stops on the Great (such as the 1st Gt. composition pedal would give) — coupled or not to one of the manuals as may appear desirable. The 8^{ft} pedal Principal or Violoncello is more *definite* than the Bass Flute, or than the result obtainable by adding a Pedal octave to the Bourdon, for pedal passages which have to be brought into prominence. A bold, full effect from the Great Diapasons, or the full Swell, if opened, will certainly demand the addition of the 16^{ft} Open Diapason, and a corresponding strengthening of the 8^{ft} tone is obtained either by the addition of another 8^{ft} Pedal stop, or by coupling to Pedals.

When the Great Diapasons are used uncoupled, an excellent and expressive pedal may be obtained by coupling the Swell 16^{ft} and 8^{ft} reeds to the Pedal Bourdon and Bass Flute. The 16^{ft} pedal reed not only adds dignity and power to the full organ, but may often be effectively used when considerably less than the full power of the organ is employed, to give weight and prominence to certain pedal passages. Occasional verses in psalms or hymn tunes without pedals give great relief to the ear, enabling the pedal to re-enter with impressive effect.

Many players fall into one of these two opposite errors; the brutal employment of the 16^{ft} pedal Open with loud reeds, — probably a powerful full Swell — throughout the service, or a tame accompaniment mostly on a few colourless choir stops, fearing to use full organ effects occasionally in verses which positively cry aloud for such treatment. In the Anglican service, for instance, when the psalms are chanted, it is quite inconceivable that such verses as these should be tamely treated: —

Ps. LXXVII. v. 16. The waters saw thee, O God, the waters saw thee and were afraid: the depths also were troubled.

17. The clouds poured out water, the air thundered: and thine arrows went abroad.

18. The voice of thy thunder was heard round about: the lightnings shone upon the ground, the earth was moved and shook withal.

Weak choirs in danger of being completely drowned by the powerful organ effects demanded by such verses might be directed to sing them in unison, suitable chants

being chosen for that purpose. The needful contrast and relief may be afforded by taking verse 20 "Thou leddest thy people" on some flue stops, *mf* without the pedals; nor is there any necessity to make an anti-climax by bringing up the "Gloria" to the dramatic intensity of the verses quoted; — a rich *forte*, such as is afforded by the Gt. Diapasons coupled to the full Swell, will probably suffice.

Use of the Tremulant.

The Tremulant is chiefly used with the Vox Humana or Oboe, — sometimes with the Contra Fagotto or Horn, — in solo passages. Its effect is wearisome if long continued, as sometimes prescribed by French writers. Generally speaking, a melodic phrase of 8 bars or so at a time is sufficient. A good Vox Humana is sometimes effective in full harmony; whether used thus or in single notes, the tremulant is invariably drawn with it. A piquant effect may be produced by using the tremulant with the Gedackt 8^{ft} and a 2^{ft} stop, playing single notes only, on the upper two octaves of the keyboard.

Instances of its effective use when accompanying the choir will be rare. An exceptional case might be cited in Psalm CIII, v. 15 & 16, where, with Swell to Oboe or Principal a few beats of it only are suggested for the first half of v. 16.

v. 15. The days of man are but as grass: for he flourisheth as a flower of the field.

v. 16. For as soon as the wind passeth over it, it is gone: and the place thereof shall know it no more.

Special Effects.

Besides the orthodox combinations applicable to every organ, the advanced student who is well grounded in the general principles of registration will frequently find on individual instruments certain combinations available for occasional use, which are apparently outside the prescribed rules. The acoustic properties of a building, or the "voicing" of particular stops, and their relative power will account for certain combinations blending well on one organ, whereas on another they would be quite inadmissible. By a quick comprehension of every resource afforded by

each particular instrument, experienced players will often get more variety from an ordinary two manual organ than others, equally skilful, it may be, as regards technique, but with less knowledge of orchestration or feeling for tone color, produce from three manuals. It is said that organists who saw Bach prepare his stops before playing, were frightened, believing such combinations could never blend; but were subsequently surprised and delighted at the effects produced.

A few hints are here given by way of helping students to make the most of the resources at their disposal.

In small organs possessing no manual double, the effect of one may be suggested by playing a verse of a hymn tune or chant an octave lower on some suitable combination of Swell or Great 8 & 4^{ft} thus:

Ex. 33. T. Tallis.

R. H. L. H.

Playing thus an octave lower, a full and brilliant effect might be produced by means of the Sw. 8^{ve} Coupler, using the Full Swell without manual doubles.

Many other good effects may be got from octave and sub octave couplers. For example, in the specification given, the Swell Gedackt and Gamba with the octave coupler drawn, would be found an agreeable change from the ordinary direction "Swell soft 8 & 4^{ft}".

Sometimes a light and agreeable effect may be got by using a few 8^{ft} with a 2^{ft} stop, without the Principal between to bind them more closely together; to this a soft double might be added. A Lieblich Bourdon 16^{ft} combined with a 4^{ft} Flute will often make a good solo, if a soft, plaintive effect be desired, accompanied by the Swell with Oboe. A Gamba and Flute, — one only of 8^{ft} and one of 4^{ft} — is often a very rich combination, either in chords or as a solo.

Clarionet and Gemshorn 2^{ft} appears an utterly impossible combination; yet the author has known the thin, reedy tone of the latter stop merge so perfectly into that

of the Clarionet, (if used within about the range of an alto voice only), that it merely gave a peculiar and plaintive coloring to the reed without being distinguishable as a separate stop. A 15th, whilst perhaps more generally useful, on account of its brilliancy, would have been too bright and hard.

Even the 12th, if not too bright and shrill, may sometimes be used without the 15th or Principal; giving in the middle of the keyboard solo effects, if combined with a Gamba, Gedackt and Flute, resembling a Clarionet, and serving as a substitute for that stop in some instruments. Such unorthodox combinations are, of course, limited to one or two octaves of the keyboard — best ascertained by actual experiment — above and below which stops stand out for that which they actually are. For bell effects also, the 12th is sometimes used without the 15th.

For a very bright, flute-like effect, available only on the upper half of the keyboard as a solo, a 2^{ft} stop may be combined with a Clarabella, Gedackt or Hohl Flute. Sometimes a 16^{ft} Lieblich Bourdon is used, with singular effect, with a 2^{ft} stop, — three octaves apart, — as in Lemmens' *Fantasie Pastorale* or "*Storm Fantasia*". In organs containing a Harmonic "Open Diapason" the upper part of this stop is often available as a powerful flute solo against the Swell reeds.

On organs built upon the Hope-Jones system many novel effects may be produced. For example, the Quintadena, 4^{ft} (voiced to yield some of the upper partials very strongly), is effective as a solo stop in the tenor register. A light arpeggio passage in the treble with a soft 8^{ft} foundation stop combined, sounds actually higher in pitch than the same 8^{ft} used with the ordinary 2^{ft} Harmonic Piccolo. Some of the more powerful reeds more nearly resemble the orchestral Trombone class of instruments than the ordinary type of organ reed bearing similar names; whilst the "*Tibia Plena*" is singularly effective in passages imitative of the harp.

The Organ in Public Worship.

Opening Voluntaries. These should be of a quiet, devotional character. As it is difficult to know the exact

moment the service will begin, and in order to avoid the awkwardness of having either to bring some well known composition to a premature and unsatisfactory conclusion, or to keep clergy and congregation standing waiting for the organist to finish, — when every minute seems an age, — experienced players usually prefer extemporising in one of the simpler forms. For those who are unable to do so satisfactorily, the slow movements of Smart and Merkel may be instanced as models of what opening voluntaries should be.

The Responses. Tallis' Ferial Responses should be unaccompanied; the Festal form for use at Easter, Christmas, etc. is better accompanied plainly, *p* to *mf* as the words suggest, on suitable 8 and 4^{ft} stops without any solo effects.

Hymn Tunes. These are usually played over with both hands on the same manual, using foundation stops of 8^{ft} pitch, with perhaps, one of 4^{ft}, and without pedals, for example:—

- (a). Swell Diapasons with or without Principal.
- (b). Great Clarabella and Open Diapason No. 2, or Gamba.
- (c). Choir Gedackt, Dulciana and Violin Diapason with or without Flute.

The pure four-part harmony will then stand out clearly for the benefit of each voice part equally; but when new tunes are introduced it may sometimes be desirable to play the treble part as a solo for Clarabella, Clarionet or a 4^{ft} Flute an 8^{ve} lower, etc. The left hand accompanies on Swell or Choir soft 8^{ft}, with a quiet pedal accompaniment. The Swell and Choir will be found most useful as an unobtrusive support to ordinary choirs, the Great being mostly reserved (especially if the stops are boldly and powerfully voiced) for special *f* or *ff* effects; but when the singing is congregational in character, or the choir large and powerful, the Great will be more frequently needed. As no exact rules can be given, the player's taste and judgment must decide upon the amount of organ tone desirable. Beginners will here note that

1. When the pedals are used, the left hand plays the tenor part.

2. A soft stop of 8^{ft} pitch on the pedals, or the pedals coupled to one of the manuals, in order to obtain it, is necessary, even in the softest lines, to "define" the bass part clearly.

3. When the trebles have to sing the same note two or three times consecutively, it must be clearly repeated each time; but when this occurs in any of the lower parts the notes are sustained from chord to chord, unless the phrasing suggests an obvious disconnection.

4. The first chord must be pressed down with decision on manuals and pedals simultaneously.

5. It is a good plan to allow one silent bar between each verse of a hymn tune, which must suffice for a rapid rearrangement of stops. *But if the sentence is carried on from one verse to another there should be no break.*

6. "Dragging" on the part of the choir is corrected by a temporary suspension of our 3rd rule; a few staccato chords generally sufficing to awaken the choir to a proper sense of rhythm and speed, the pedals only participating in the staccato effect in very flagrant cases. The original tempo, if once lost towards the beginning, is not easily regained without much unsteadiness between the more experienced members of the choir and those possessing less feeling for time and rhythm.

In *p* passages, the left hand on the Swell 8^{ft} with Oboe, and the right hand (treble and alto parts) on a couple soft choir 8^{ft}, with or without the 4^{ft} Flute; the pedal Bourdon being coupled to the Swell only, will give an effective, quiet support. When the tenor part is a melodious one, it may occasionally be brought into prominence as a solo, for example:—

(a). Gt. Diap. and Flute, L. H. (*mf* to *f*); R. H. on Swell or Choir 8 and 4^{ft}; Ped. Bourdon and Bass Flute, or Bourdon with Sw. or Ch. coupled.

(b). Sw. Oboe and Horn with the Diapasons, L. H.; R. H. on Choir 8 and 4^{ft}; Ped. Bourdon and Bass Flute, or Bourdon with Ch. to Ped. coupler only.

The Great Diapasons coupled to all the Swell 8^{ft} foundation stops with the reeds makes a rich, full combination. The Gt. Diapasons should sometimes be heard

uncoupled, (without any reed or even Gamba coloring), in four-part harmony.

A knowledge of harmony enables the player to construct a melodious inner part, or even an entirely new part as a solo above the treble, with excellent effect, and the plain "note against note" of so many of our English hymn tunes may often be treated less stiffly with free counterpoint, without altering the four-part harmony as sung by the choir, if the student has gained some fluency in counterpoint. As excellent and well known examples of a diversified treatment of hymn tunes may be mentioned "The Son of God goes forth to war" (St. Ann's) by Sir A Sullivan, and "Praise, my Soul, the King of Heaven" by Sir John Goss.

Chanting. The suggestions as to effective combinations already given are of course equally applicable here. There must be no pause whatever between the verses, however, and in the Psalms, only the first chant is played over; sometimes only the first section of the chant, or merely the chord. It is an ancient custom, observed in many churches, to play over the *bass only* of the first phrase of the chant, whether Gregorian or Anglican. There is, of course, considerable scope for dramatic treatment, when done with taste and discretion. An example of a special treatment of Psalm cl., a Psalm usually associated with Pelham Humphrey's "Grand Chant" is here given: —

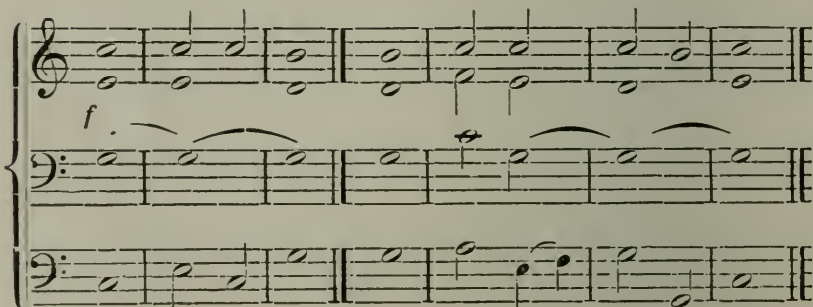
Psalm CL. — *Laudate Dominum.*

Ex. 34.

Ps. cl. P. Humphrey's "Grand Chant", Arr. by J. Matthews.

V. 1. Gt 8 & 4 ft cpld to Sw. with Reeds.

V. 2. Full Choir " " " " "



V. 3. Gt. Trumpet (uncoupled)

Sw.

Full Sw.

V. 4. Ch. Ged. & 2 ft (uncoupled)

Sw. 8 & 4 ft only (closed)

mf

Soft 16 & 8 ft.

V. 5. Gt. 8 & 4 ft.

f

Full Sw.

Add to
Ped. Org.

V. 6. Full Sw. cpld. to Gt. ff
[Full Org.]

Full Ped. cpld.

Gloria (Full Harmony as in V. 1) reduce
to Gt. 8 & 4 ft cpld. to Full Swell.

In this setting, the choir must take the verses as follows: —

- | | | |
|-----------------|---|--|
| Full Harmony | { | 1. O Praise God in his holiness: praise him in the firmament of his power. |
| <i>ff</i> | | 2. Praise him in his noble acts: praise him according to his excellent greatness. |
| T & B (unis) | | 3. Praise him in the sound of the trumpet: S & A (unis) praise him upon the lute and harp. |
| S. only | | 4. Praise him in the cymbals and dances: praise him upon the strings and pipe. |
| S. A. T. (unis) | | 5. Praise him upon the well tuned cymbals: Praise him upon the loud cymbals. |
| Full (unis) | | 6. Let every thing that hath breath: praise the Lord. <i>Gloria</i> in harmony. |

Concluding Voluntaries. These are usually of a bolder character than the introductory ones. Smart's three Postludes in C, D, & E \flat , the allegros of Handel's Concertos, the first and final movements of Mendelssohn's, Merkel's and Rheinberger's Sonatas, are, in addition to Bach, the finest compositions for this purpose. A further selection is included in the "Guide" at the end of this book.

Flattening in pitch against the Organ.

The real preventative is, of course, careful practising of the choir — especially the trebles — in scales. Occasionally, however, really good choirs will sink in pitch in dull, heavy, wet weather, or it may be, pulled down

by flat singing in the congregation, or through having to sustain a *p* or *pp* for a considerable time to a very subdued accompaniment. The use of manual stops of 16th pitch will also draw down voices, and except when required to balance the full Sw. or full Gt., manual doubles are only used under special circumstances. (See p. 78 "Use of the manual 16th Stops.")

When flattening does occur, the remedy should be promptly applied, and the following are the methods adopted by experienced players:—

1. The addition of stops of 4 and 2nd pitch.
2. A crescendo by means of the Swell Pedal.
3. Playing the upper part an octave higher with the right hand on the Gt. Clarabella, or on Choir soft 8th coupled to the Swell.

Sharp singing, a less frequent fault, is sometimes caused by a too loud accompaniment inciting the voices to exceed their natural powers.

Faults to be avoided.

In accompanying a choir, the first chord should be played decisively and simultaneously with the pedal note. An old and objectionable practice still lingers of putting down the pedal first, then making an arpeggio from the bottom upwards. Less objectionable, but mostly unnecessary, is the opposite habit of sounding the treble note in advance. If the trebles are likely to be uncertain in starting, their part may be brought into prominence by being played as a solo on Choir or Great, the left hand accompanying on the Swell, (coupled or not), without having recourse to this method of prompting:

Some players often precede the treble note in chants and hymn tunes with an appoggiatura, the object being to call attention to the note; the effect is flippant and tasteless.

Running up and down the chromatic scales and playing arpeggios up and down the keyboard when accompanying the choir, are grotesque exhibitions now happily seldom heard. Such practices, traceable to a decadent period in English Church Music, are condemned by good players.

The Swell Pedal is frequently abused, some players being apparently unable to keep the right foot away from it for many bars together. Good pedalling is often thereby sacrificed. Staccato pedalling is another failing which

robs the instrument of all dignity when the service is habitually so accompanied. By some organists, pedals and manuals are not played quite simultaneously, one dragging after the other with an unpleasant, blurred effect analogous to that produced by some pianists in whose chord playing the left hand slightly precedes the right.

Reducing the stops at the end of a piece.

At the end of a piece, or after the verses in hymn tunes, (but not in chanting) the stops are rapidly reduced as far as possible by means of the composition pedals. Rapidity in making the needful changes from verse to verse must be cultivated. As even blind organists are able to give recitals on large organs after a brief preliminary trial, a very cursory glance should suffice for those gifted with sight, in determining the position of each stop, and experienced players deem themselves fortunate if only a crotchet rest occurs to enable one hand to make several rapid changes, without troubling to *look* at the drawstops.

In loud pieces, the final chord has a fine effect in a resonant building if ended abruptly and cleanly after its due value; but it is generally better to let the pedal linger a second after the hands have been removed from the keys. When it is desired to reduce the full organ to a pianissimo, after closing the Swell and quickly effecting all that is possible by means of composition pedals or pistons, — (the softest 8^{ft} foundation stop only remaining), — the chord is grasped as conveniently as may be by one hand whilst the other pushes in the couplers. The notes are finally released from the top downward, a soft pedal 16th being the last sound heard. Or, after reducing Swell and Great to their softest 8^{ft} foundation stops, without putting in the Swell to Great coupler, the hands may be transferred to the Swell; the Gedackt or Gamba on it being the last gradation possible in the diminuendo.

Rapid transference of the hands from one manual to another.

A striking effect, peculiar to the organ, — that of short phrases answering each other by means of a rapid change of keyboard, remains to be mentioned. In Bach, the closest interchange of this kind occurs in his arrangement of Vivaldi's Concertos. The following extract from

the 4th Concerto has the directions "Ruckpositiv" (Back Choir) and "Ober werk" (Upper manual).

Ex. 35.

Concerto No. 4. J. S. Bach.

This effect has been developed by modern composers: —

Ex. 36.

Variations on a theme of Beethoven.

Fr. Var. 2.

G. Merkel. Op. 45.

Ex. 37. Allegretto.

Caprice Op. 20. A. Guilmant.

The incessant changes maintained throughout this piece of Guilmant's renders it one of the best studies for obtaining dexterity in making such changes.

Mental and Mechanical Difficulties.

As the difficulties in performing organ music of the highest type are, from the contrapuntal nature of the music, to a great extent mental, the practice of score reading apart from an instrument is recommended. For this purpose the cheap editions of Haydn's, Mozart's and Beethoven's Symphonies in full score are invaluable. In addition to the formation of the student's taste, and the knowledge of orchestration gained by the study of these masterpieces, the following direct benefit to his organ playing will result:—

1. Facility in reading several clefs simultaneously. Sometimes four staves are used by organ composers to express their intentions more clearly, and in ordinary anthems and choruses an organist must be able to follow easily with the eye all the voice parts whilst playing his own organ part.

2. Familiarity with the alto and tenor clefs so often required in reading church music from score, and in the choral preludes of Bach.

3. An instinctive feeling for the most suitable combinations of stops in playing arrangements of orchestral works.

The mental difficulties being thus, so to speak, gradually smoothed away, the mechanical ones are purely a question of steady application to the course of studies recommended by a competent teacher to suit each individual case.

Arrangements for the Organ.

Whilst in Germany, owing to a stricter taste in organ playing, arrangements of orchestral or choral works, piano pieces, trios, quartets, etc. are seldom heard, in England, France and America such are freely used, and recital programmes are sometimes seen which contain scarcely a single organ composition. As nearly all English organists are compelled at times to play at least some arrangements, a few suggestions here will not be out of place.

First, a good knowledge of orchestration, — comprising an accurate perception of the tone quality of each orchestral instrument, must be acquired.

The indications as to manuals and stops can only be regarded *as suggestions*, each organ requiring individual treatment. The most successful imitative stops are, the Clarionet, Oboe, Trumpet and Flute. Delicate phrases for solo violin above the other parts may sometimes be effectively given on Choir or Great Dulciana, or Viol d'Amour, whilst bolder forte passages in which all the violins participate, must, perforce, receive the addition of many stops conveying little or no idea of "string" tone.* However, in our imaginary orchestral transcription, Flutes, Oboes, or Clarionets will frequently be found "doubling" the violin passages, but the organ Clarionet being essentially a "solo" stop cannot thus be mixed with the others with analogous effect.

In some large organs, the rich orchestral effect of a number of Violoncelli playing a melody in unison, can be very effectively rendered by massing together on Choir or Great all available 8th stops of Gamba character (Dulciana, Salicional, Geigen Principal or Violin Diapason, Viol d'Amour, all, as far as possible, included); whilst a good pedal Violoncello 16th can give effects highly suggestive of the actual "bite" of the bow of the orchestral Double Basses and Violoncelli.

Light staccato or Piccolo effects may be obtained by uniting a 2nd stop to an 8th Gedackt, Clarabella, Hohl Flöte or Rohr Flöte, using the upper two octaves of the keyboard only. Mr Best's treatment of organ arrangements on large organs of ample resources, and Sir John Stainer's accompaniment of Spohr's "Last Judgment", (formerly given annually at St. Paul's Cathedral without orchestra) may be cited as artistic triumphs over the difficulties presented by this branch of our subject.

As a rule, slow movements from the orchestral works of the great composers are relatively more effective than the Allegros, and many charming movements from the symphonies, serenades and concertos of Haydn and Mozart, (in which the orchestration is not so crowded as in modern works) may be artistically reproduced, if carefully studied and well adapted to the particular organ upon which

* The orchestra, naturally, is endowed with more "life" and individuality, whilst the organ is homogenous, and therein lies the arranger's greatest difficulty.

they are to be played. And it is obviously better that such movements should become known through the medium of an arrangement than not at all.

A few piano pieces may be mentioned which really gain by transference to the organ, such as Henselt's "Ave Maria" and the well known Pastorale of Kullak. Many of Handel's Choruses and Concerto movements are highly effective for the organ alone, and amongst the most valuable arrangements are those of Best, Prout, Stone, Westbrook and Wodehouse. A number of those which usually come out well on ordinary organs of 2 and 3 manuals will be found at the end of the "Guide through Organ Literature".

PART IV.

Specifications.

1. Organ in the Royal Albert Hall, London, built by Mr. Henry Willis, 1871.

Great Organ CC to C, 61 notes.

1. Flute conique (partly harmonic)	16ft	13. Viola	4ft
2. Contra Gamba	16,,	14. Octave	4,,
3. Violone	16,,	15. Quinte Octaviant	2 ² / ₃ ,,
4. Bourdon	16,,	16. Piccolo Harmonique	2,,
5. Open Diapason	8,,	17. Super Octave	2,,
6. " " No. 2	8,,	18. Furniture, V ranks	—
7. Viol di Gamba	8,,	19. Mixture V ranks	—
8. Claribel	8,,	20. Contra Posaune	16ft
9. Flute Harmonique	8,,	21. Posaune	8,,
10. Flute à Pavillon	8,,	22. Trompette Harmonique	16 and 8,,
11. Quint	5 ¹ / ₃ ,,	23. Tromba	8,,
12. Flute Octaviant Harmonique	4,,	24. Clarion Harmonique	8 and 4,,
		25. Clarion	4,,

(All metal except Bourdon and Claribel.)

Swell Organ CC to C, 61 notes.

1. Double Diapason	16ft	8. Quint	5 ¹ / ₃ ft
2. Bourdon	16,,	9. Flute Harmonique	4,,
3. Salicional	8,,	10. Viola	4,,
4. Open Diapason	8,,	11. Principal	4,,
5. Viol di Gamba	8,,	12. Quinte Octaviant	2 ² / ₃ ,,
6. Flutes à Cheminées	8,,	13. Super Octave	2,,
7. Claribel Flute	8,,	14. Piccolo Harmonique	2,,

15. Sesquialtera V ranks	—	21. Oboe	8ft
16. Mixture V ranks	—	22. Cornopean	8,,
17. Contra Posaune	16ft	23. Tuba Major	8,,
18. Contra Oboe	16,,	24. Tuba	4,,
19. Baryton	16,,	25. Clarion	4,,
20. Voix Humaine	8,,		

(All metal except basses of Bourdon and C. Flute.)

Choir Organ CC to C, 61 notes.

1. * Violone	16ft	12. Piccolo (harmonic)	2ft
2. Viol di Gamba	8,,	13. Super octave	2,,
3. * Dulciana	8,,	14. * Mixture III ranks	—
4. Lieblich gedackt	8,,	15. Corno di Bassetto	16,,
5. Open Diapason	8,,	16. Clarionet	8,,
6. * Vox Angelica	8,,	17. * Cor Anglais	8,,
7. Principal (harmonic)	4,,	18. Oboe	8,,
8. * Gemshorn	4,,	19. Trompette Harmonique	16 and 8,,
9. * Lieblich Flote	4,,	20. Clarion	4,,
10. Celestiana	4,,		
11. Flageolet	2,,		

(Ch. Org. entirely of metal. Stops marked * voiced to form an Echo organ.)

Solo Organ CC to C, 61 notes.

1. Contra Bass	16ft	11. † Corno di Bassetto	16ft
2. Flute à Pavillon	8,,	12. † Clarionet	8,,
3. Viol d'Amore	8,,	13. Bassoon	8,,
4. Flute Harmonique	8,,	14. † French Horn	8,,
5. Claribel Flute	8,,	15. Ophicleide	8,,
6. Voix Celeste	8,,	16. Trombone	8,,
7. Flute Traversiere	4,,	17. † Oboe	8,,
8. Concert Flute	4,,	18. Bombardon	16,,
9. Piccolo Harmonique	2,,	19. Tuba Mirabilis	8,,
10. Cymbale	—	20. Tuba Clarion	4,,

(Solo stops marked † enclosed in a swell box.)

Pedal Organ CC to G, 32 notes.

1. Double Open Diapason (wood)	32ft	7. Violone	16ft
2. Double Open Diapason (metal)	22,,	8. Great Quint	10 ² / ₃ ,,
3. Contra Violone	32,,	9. Violoncello	8,,
4. Open Diapason (wood)	16,,	10. Octave	8,,
5. " " (metal)	16,,	11. Quint	5,,
6. Bourdon	16,,	12. Super octave	4,,
		13. Furniture V ranks	—
		14. Mixture III ranks	—

15. Contra Posaune	32 ^{ft}	19. Trombone	16 ^{ft}
16. Contra Fagotto	16 ⁿ	20. Fagotto	8 ⁿ
17. Bombarde	16 ⁿ	21. Clarion	8 ⁿ
18. Ophicleide	16 ⁿ		

Couplers.

Solo Sub Sve (on itself)	Solo to Choir
" Super " " "	" " Pedals
Swell Sub " " "	Swell " "
Unison Solo to Gt.	Great " "
" Sw. " "	Choir " "
" Choir " "	Sforzando.
Swell to Choir	

There are 32 combination pistons (8 to each manual) 6 Ventil pedals for the Pedal organ. 2 Pedals apply and detach a movement that causes these 6 pedals to act also upon the combination movement of the Gt. 6 Pedals govern and combine in various ways all the other accessories; thus by one instantaneous movement of the performer varying the effect of the whole instrument. 2 Pedals govern the Gt. to Ped. Coupler. A double acting vertical movement for the heel of either foot detaches and connects the movement of the Pedal organ from all but the Bourdon, Violone, metal Open Dps. and Octave, and also draws and withdraws the Gt. to Ped coupler. The Sw. and Solo Tremulants act only upon suitable stops. There is an atmospheric contrivance (patented 1892) for actuating the Swell independently of the Sw. Ped. The front pipes are made of 90 p. c. tin to 10 of lead, the interior pipes being of spotted metal.

*2. Organ in the Philharmonic Concert Hall, Berlin,
built 1888 by Schlag & Sons from a specification
by Otto Dienel.*

Hauptwerk (Great) CC to G.

1. Principal (Op. Dp.)	16 ^{ft} 56 pipes	9. Gambe	4 ^{ft} 56 pipes
2. Bourdon	16 ⁿ 56 "	10. Rauschquinte	
3. Principal (Op. Dp.)	8 ⁿ 56 "		2 ² / ₃ and 2 ⁿ 112 "
4. Gambe	8 ⁿ 56 "	11. Cornet, III to V	
5. Grob-Gedackt	8 ⁿ 56 "	ranks	244 "
6. Portual flote	8 ⁿ 56 "	12. Mixture V ranks	280 "
7. Octave	4 ⁿ 56 "	13. Trompete	8 ⁿ 56 "
8. Flute harmonique	4 ⁿ 56 "		

Schwellwerk (Swell) CC to G.

1. Gedackt	16ft 56 pipes	8. Rohr flote	4ft 56 pipes
2. Principal (Op. Dp)	8,, 56 "	9. Fugara	4,, 56 "
3. L. Gedackt	8,, 56 "	10. Harmoniaetherea	
4. Flute Harmonique	8,, 56 "	II to III	
5. Salicet	8,, 56 "	11. Scharf. Mix. V	
6. Unda Maris	8,, 56 "	ranks	280 "
7. Octave flote	8,, 56 "	Clarinette	8,, 56 "

† Solowerk (and Choir) CC to G.

1. Bordun	16ft tone 56 pipes	8. Nassard	2ft 56 pipes
2. Stentorphon	8,, 56 "	9. Piccolo	2,, 56 "
3. Hohlflote	8,, 56 "	10. Solo Cornet III	
4. Violon	8,, 56 "	to V rks.	244 "
5. Octave	4,, 56 "	11. Oboe	8,, 56 "
6. Flaut traverse	4,, 56 "	12. Tuba mirabilis	8,, 56 "
7. Violine	4,, 56 "		

† All in a Swell except the Tuba.

Pedal. CCC to F.

1. Offen bass	16ft 30 pipes	8. Violine	4ft 30 pipes
2. Sub-bass	16,, tone 30 "	9. Nassard	10,, 30 "
3. Violon	16,, 30 "	10. Cornet III ranks	
4. Flautbass	16,, ,, 30 "	($5\frac{1}{3}$; 4 and $3\frac{1}{5}$)	90 "
5. Principal	8,, 30 "	11. Posaune	16,, 30 "
6. Violine	4,, 30 "	12. Tuba	16,, 30 "
7. Gedackt	8,, 30 "	13. Trompete	8,, 30 "

Couplers: Sw. to Gt; Solo to Gt; Sw. Sub-Octave to Gt; Gt. to Ped; Sw. to Ped, Solo to Ped, and a "Collectiv" Coupler by draw stop and also by pedal, uniting all the former except the Sub-Octave.

• By Pedal: — Pedal to disconnect couplers; Pedal to "fix" any desired combination of Great Org. stops. Draw stop to shut off all the Reeds. Pedal named "Accent Coppel", affecting the Great Keys, so that by deeper touch the Swell and Solo manuals are brought on. This pedal coupler releases all the other couplers except Gt. to Ped., Solo to Sw. and Sw. Sub-Octave to Gt.

Seven combination pistons to each manual, arranged and labelled thus: MF., mezzoforte combination, F., forte, FF, fortissimo; Fl., stops of flute quality; Gb., Gamba or String toned stops; R, Reeds. O (Null Knopf) annuls these ventill arrangements, allowing the stops actually drawn to speak.

Four Composition Pedals to Pedal Organ, giving full pedal, forte and piano combinations, the fourth being a "Null Tritt" to annul the effect of these combinations as in the case of the manual knobs.

Five "Collective Tritte" — four pedals for adding (with the necessary couplers) to the existing registration, a mf, f, ff, or reed ensemble; the fifth being a "Null Tritt" acting as previously described.

A "General Null Tritt" throws out of action all combinations save those made by hand.

The "Roll Swell" or General Crescendo, placed in the middle by the side of the two balanced Swell pedals, and worked by the foot, gives a graduated crescendo of the entire organ from pianissimo to its full power, acting on the couplers and Swell shutters as well. The reverse movement produces a decrescendo, and a dial to the right of the desk shows the player the degree of power arrived at.

A "Prolongement harmonique" (by draw stop and pedal), fixes any key on the Swell until the player chooses to release it by pressing down the pedal.

The action is Electro-Pneumatic by Welte und Sohne, Freiburg, (Schmoele-Mols Patent).

The pipe work is entirely concealed behind an elaborate architectural design of light iron scroll work, forming a screen for the entire contents of the organ.*

*3 Organ in Tewkesbury Abbey, built 1885** by Michell & Thynne.*

Great Organ CC to C, 61 notes.

1. Violin Diapason	16ft	6. Flute Octaviante	4ft
2. Great Open Diapason	8,,	7. Quint Mixture (12 th , 15 th ,)	—
3. Small "	8,,	8. Great Mixture (19 th , 22 nd ,	
4. Claribel (wood, " open,	8,,	26 th , 29 th ,)	
throughout)	8,,	9. Tromba	16ft
5. Octave	4,,	10. Trumpet	8,,

* This unusual treatment has also been adopted by Mr H. Willis in his organ in Union Chapel, Islington.

** For the Inventions Exhibition; it was also exhibited in 1886 at Liverpool, and erected in Tewkesbury Abbey in the following year.

Accessory Stops to Great.

Sub-Octave Choir to Great	Ventil Great Mixture and Reed
Swell to Great	Prolongement Harmonique.
Solo to Great	Three Composition Pedals
Ventil, Flue to Quint Mixture	
(Three different pressures of wind to Great Organ).	

Swell Organ CC to C, 61 notes.

1. Flauto Traverso	8ft	6. Mixture (15 th , 19 th and 22 nd .)	—
2. Open Diapason	8,,	7. Contra Posaune	16ft
3. Viole de Gambe	8,,	8. Horn	8,,
4. Voix Celeste	8,,	9. Oboe	8,,
5. Geigen Principal	4,,		

Accessory Stops to Swell.

Octave Coupler	Tremulant
Ventil, Flue to Geigen Prin.	Nos. 6, 7 and 8 on heavy wind.
Ventil, Mixture and Reeds	
(Swell Box made in 3 one-inch thicknesses, felted between each, and lined.)	

Choir Organ CC to C, 61 notes.

1. Spitz Flote	8ft	5. Zauberflote	4ft
2. Viole Sourdine	8,,	6. Flautina	2,,
3. Gedackt	8,,	7. Clarionet	8,,
4. Gernshorn	4,,		

Accessory stops to Choir.

Swell to Choir	Ventil
Octave Coupler	Tremulant.
Pneumatic Piston acting on No. 1	
off and on.	

Solo Organ, CC to C, 61 notes.

1. Harmonic Flute	8ft	4. Voix Humaine (in a Swell box)	8ft
2. Violoncello	8,,		
3. Tuba	8,,		

Accessory Stops to Solo.

Octave Coupler	Tremulant.
Two Ventils	

Pedal Organ CCC to F, 30 notes.

1. Harmonic Bass	32ft	4. Great Flute (wood)	8ft
2. Great Bass	16,,	5. Bombarde	16,,
3. Dolce (wood, open)	16,,		

Pedal Couplers.

Choir to Pedals

Swell to Pedals

Great to Pedals †

Solo to Pedals.

† on double acting pedal.

The organ is pneumatic, except the Choir. Six different wind pressures are provided, with separate reservoirs; the trebles being still further isolated to insure steadiness of tone. The ventil system is combined with the ordinary composition movement worked by pneumatic pistons. Two Speight hydraulic engines supply the bellows.

*4. Organ in Westminster Abbey, built by W. Hill & Sons.**Great Organ, CC to A.*

1. Double Open Diapason	16ft	8. Twelfth	2 ² / ₃ ft
2. Open Diapason (I)	8,,	9. Fifteenth	2,,
3. Open Diapason (II)	8,,	10. Mixture 4 ranks	—
4. Open Diapason (III)	8,,	11. Double Trumpet	16ft
5. Hohl Flute	8,,	12. Posaune	8,,
6. Principal	4,,	13. Clarion	4,,
7. Harmonic Flute	4,,		

Nos. 11, 12 and 13 on a heavier wind.

Choir Organ, CC to A.

1. Gedackt	16ft	7. Nason Flute	4ft
2. Open Diapason	8,,	8. Suabe Flute	4,,
3. Keraulophon	8,,	9. Harmonic Gemshorn	4,,
4. Dulciana	8,,	10. Contra Fagotto	16,,
5. Lieblich Gedackt	8,,	11. Cor Anglais	8,,
6. Principal	4,,		

Celestial Organ, CC to A.

1. Double Dulciana, Bass	16ft	11. Harmonic Trumpet	8ft
2. Double Dulciana Treble	16,,	12. Musette	8,,
3. Flauto Traverso	8,,	13. Harmonic Oboe	8,,
4. Viola da Gamba	8,,	14. Vox Humana	8,,
5. Voix Celeste	8,,	15. (Spare Slide)	
6. Hohl Flute	8,,	16. Glockenspiel, 3 ranks	
7. Dulciana Cornet, 6 ranks	—	17. Gongs (3 Sves of brass gongs struck by electro-pneumatic hammers).	
8. Cor de Nuit	8ft		
9. Suabe Flute	4,,		
10. Flageolet	2,,		

Swell Organ, CC to A.

1. Double Diapason, Bass	16ft	10. Dulcet	4ft
2. Double Diapason Treble	16,,	11. Principal	4,,
3. Open Diapason (I)	8,,	12. Lieblich Flute	4,,
4. Open Diapason (II)	8,,	13. Fifteenth	2,,
5. Rohr Flote	8,,	14. Mixture, 3 ranks	—
6. Salcional	8,,	15. Oboe	8ft
7. Voix Celeste	8,,	16. Double Trumpet	16,,
8. Dulciana	8,,	17. Cornopean	8,,
9. Hohl Flute	8,,	18. Clarion	4,,

Nos. 16, 17 and 18 on a heavier wind.

Solo Organ, CC to A.

1. Gamba	8ft	5. Orchestral Oboe	8ft
2. Rohr Flote	8,,	6. Clarionet	8,,
3. Lieblich Flute	4,,	7. Vox Humana	8,,
4. Harmonic Flute	4,,	8. Tuba Mirabilis	8,,

Nos. 5, 6 and 7 in a Swell, No. 8 on heavy wind.

Pedal Organ, CCC to F.

1. Double Open Diapason	32ft	6. Bass Flute	8ft
2. Open Diapason	16,,	7. Violoncello	8,,
3. Open Diapason	16,,	8. Contre Posaune	32,,
4. Bourdon	16,,	9. Posaune	16,,
5. Principal	8,,	10. Trumpet	8,,

Couplers.

1. Sw. to Gt.	4. Solo to Gt.	7. Ch. to Ped.
2. Sw. Octave	5. Gt. to Ped.	8. Solo to Ped.
3. Sw. to Ch.	6. Sw. to Ped.	9. Solo Octave to Ped.

Coupler-Keys of "Celestial Organ".

1. Celestial to 5 th manual	Swell Tremulant
2. Celestial to 4 th Manual	Solo Tremulant
3. Nos. 1 to 7 on 5 th Manual	Ten Pneumatic Combination pedals for Gt, Sw. and Ped.
4. Nos. 8 to 17 on 4 th Manual	Seven Combination Pistons to Solo and Choir.
5. Celestial Octave.	Three combination Pistons to Celestial.
6. Celestial Sub Octave	Three Crescendo Pedals.
7. Celestial to Solo, Octave.	
8. Celestial to Solo, Sub-Oct.	
9. Celestial to Pedal.	
10. Tremulant	
11. Wind.	

The original organ, (attributed to Schreider and Jordan),* has undergone several enlargements during the present century, chiefly by Messrs. Hill & Sons, the latest addition being the electric "Celestial" Organ in 1895 (the gift of Mr. A. D. Clarke) placed over the tomb of Handel in the Triforium of the South Transept, and enclosed in a Swell and played from a fifth manual. Nos. 8 to 17 can be transferred at will to the fourth (Solo) manual, thus practically converting the "Celestial" Organ into a two-manual, whilst in combination with the "coupler Keys" Nos. 1 and 2, Nos 3 and 4 can be interchanged, thus reversing the claviers. Ivory stop keys with a very small sliding movement, placed over the left jamb of the console, control this fifth manual, and all 17 stops may be put on or off by one movement of the finger. The key contacts, electro-pneumatic movement at the sound-board, swell pedal movement and draw-stop movement of this manual are on a new principle, supplied by a small current from three accumulator cells, recharged when required through a miniature dynamo attached to the blowing engine. Three reservoirs at different pressures, placed below the soundboards, store the wind received through the zinc wind trunks which are carried along the Triforium floor from the main organ. The other manuals and their draw stop action are on the Pneumatic system.

5. *Organ in the Cathedral Church of St. Saviour's, Southwark, built by Lewis & Co. 1896.*

Great Organ CC to C, 61 notes.

1. Contra Viola	16 ^{ft}	8. Flute Harmonique	4 ^{ft}
2. Bourdon	16,, tone	9. Octave Quint	2 ² / ₃ ,,
3. Open Diapason, No. 1	8,,	10. Super Octave	2,,
4. Open Diapason, No. 2	8,,	11. Cornet (3, 4 and 5 ranks)	2 ² / ₃ ,,
5. Stopped Diapason	8,,	12. Mixture (4 ranks)	1 ¹ / ₃ ,,
6. Flute Harmonique	8,,	13. Trumpet	8,,
7. Octave	4,,		

Ten Key-touches for Couplers and fixed combinations.

* The original receipt signed by Father Smith, and countersigned by the Precentor and Henry Purcell for repairs and additions in 1694 has been found (1896) in the Muniment Room of the Abbey. Two stops of that instrument — a Nason and Stopped Diapason — are said to exist in the present instrument, the date of Schreider's rebuilding being 1727.

Swell Organ CC to C, 61 notes.

1. Bourdon	16ft	8. Flautina	2ft
2. Open Diapason	8,,	9. Mixture (4 ranks)	1 ¹ / ₃ ,,
3. Rohr-flöte	8,,	10. Bassoon	16.,
4. Viole de Gamba	8,,	11. Horn	8,,
5. Voix Celeste	8,,	12. Voix Humaine	8,,
6. Geigen Principal	4,,	13. Oboe	8,,
7. Rohr Flöte	4,,		

*Ten Key-touches for Couplers and fixed combinations.**Choir Organ CC to C, 61 notes.*

1. Lieblich Gedackt	16ft	6. Salicet	4ft
2. Geigen Principal	8,,	7. Flauto Traverso	4,,
3. Salicional	8,,	8. Lieblich Gedackt	4,,
4. Dulciana	8,,	9. Lieblich Gedackt	2,,
5. Lieblich Gedackt	8,,	10. Mixture (3 ranks)	—

*Ten Key-touches for Couplers and fixed combinations.**Solo organ CC to C, 61 notes.*

1. Flute Harmonique	8ft	7. Clarionet	8ft
2. Vox Angelica	8,,	8. Bombarde	16,,
3. Unda Maris	8,,	9. Tuba Magna	8,,
4. Flute Harmonique	4,,	10. Trompette Harmonique	8,,
5. Cor Anglais (Ten. C)	16,,	Octave Coupler.	
6. Orchestral Oboe	8,,		

*Ten Key-touches for Couplers and fixed combinations.**Pedal Organ, CCC to F, 30 notes.*

1. Great Bass	32ft	8. Flute Bass	8ft
2. Major Violon	32,,	9. Flute	4,,
3. Great Bass	16,,	10. Contra Posaune	32,,
4. Violon	16,,	11. Posaune	16,,
5. Sub Bass	16,,	12. Trombone	16,,
6. Dulciana Bass	16,,	13. Trumpet	8,,
7. Violoncello	8,,		

Couplers.

Great to Pedal.	Choir to Great	Six Pedals for interchangeable combinations
Swell " "	Swell " "	Ordinary Swell Pedal for Solo organ
Choir " "	Solo " "	Balanced Pedal for Swell.
Solo " "	Swell to Choir	
Solo to Swell		
Tremulant to Swell		

The entire action is Electro Pneumatic. The Solo organ is enclosed in a Swell Box. The weight of wind for the entire organ is $3\frac{1}{2}$ inches, with the exception of the "Tuba Magna", and "Trompette Harmonique", on 12 inches. An important feature is the balanced Pedal for producing a Crescendo over the whole organ, including the Solo Swell Shutters.

6. Organ in Worcester Cathedral, built in 1896 by the Electric Organ Co. on the Hope-Jones system.

Great Organ CC to C, 61 notes.

1. Diapason Phonon	16ft	7. Octave Diapason	4ft
2. Tiba Plena	8,,	8. Quintadena	4,,
3. Diapason Phonon	8,,	9. Harmonique Piccolo	2,,
4. Open Diapason	8,,	10. Tuba Profunda	16,,
5. Hohl Flute†	8,,	11. Tuba	8,,
6. Viol d'Amour	8,,		

Accessories to Great.

Sub Octave (light wind)	Swell to Great (Sub)
Super Octave (heavy wind)	" " " (Unison) Double
Solo to Great (Sub)	Touch
" " " (Unison) Double	Swell to Great (Super)
Touch	Choir " " (Sub)
Solo to Great (Super).	" " " (Unison).

5 Compound Composition Keys for Gt. Stops and Ped. Stops and Couplers.

2 Compound Composition Keys for Great Couplers.

Swell Organ CC to C, 61 notes.

1. Violes Celestes (Double Touch)	8ft	8. Harmonic Flute†	4ft
2. Contra Viola	16,,	9. Harmonic Piccolo	2,,
3. Tibia Clausa	8,,	10. Double English Horn	16,,
4. Horn Diapason	8,,	11. Cornopean	8,,
5. String Gamba	8,,	12. Oboe	8,,
6. Quintadena	8,,	13. Cor Anglais (free)	8,,
7. Gambette	4,,	14. Vox Humana†	8,,
		15. Clarion	4,,

Accessories to Swell.

Sub Octave	Choir to Swell (Second Touch)
Super Octave	Tremulant (light wind stops).
Solo to Swell (Second Touch)	

5 Compound Composition Keys for Swell Stops and Ped. Stops and Couplers.

2 Compound Combination Keys bringing on (1) Heavy reeds only; (2) Strings only; (3) both combined.

Choir Organ CC to C, 61 notes.

1. Double Open Diapason†	16ft	6. Dulciana†	8ft
2. Open Diapason†	8,,	7. Flute†	4,,
3. Cone Lieblich Gedackt	8,,	8. Cor Anglais (beating)	8,,
4. Viol d'Orchestre	8,,	9. Clarionet†	8,,
5. Tiercina†	8,,		

Accessories to Choir.

Sub Octave	Swell to Choir (Unison) Double
Super Octave	Touch
Swell to Choir (Sub)	Swell to Choir (Super).

3 Compound Composition Keys for Choir Stops, and Ped. Stops and Couplers.

2 Compound Composition Keys for Choir Couplers.

Solo Organ CC to C, 61 notes.

1. Diaphonic Horn	8ft	4. Tuba Mirabilis*	8ft
2. Rohr Flute	4,,	5. Tuba Sonora	8,,
3. Bombarde	16,,	6. Orchestral Oboe (brass)	8,,

Accessories to Solo.

Sub Octave	2 Composition Keys for Solo
Super Octave	coupler
3 Composition Keys for Solo stops	Swell Ped. for Solo Organ.

Pedal Organ CC to F, 30 notes.

1. Gravissima (lower 8ve resultant)	64ft	6. Violone†	16ft
2. Double Open Diapason† (wood)	32,,	7. Bourdon†	16,,
3. Double Open Diapason† (zinc)	32,,	8. Octave Violone	8,,
4. Tibia Profunda (wood and iron)	16,,	9. Flute	8,,
5. Open Diapason†	16,,	10. Diaphone (in 2 powers)	32,,
		11. Diaphone (in 2 powers)	16,,
		12. Tuba Profunda	16,,
		13. Tuba	8,,

* The Tuba Mirabilis is not yet (1897) inserted. It is to be voiced on 100 inches wind pressure; provided with special blowing apparatus, and enclosed in two carved oak cases, bracketed on the

Accessories to Pedal.

Solo to Pedals

Great „ „

Swell „ „

Choir „ „

Choir to Pedals

10 Composition Keys, controlling

Ped. Stops and couplers.

Composition Pedals.

1. (p); 2. (f) 3. (ff).

2 Couplers off and on.

Stop switch (Key and Pedal).

The stops marked † are from the old organ, attributed to Renatus Harris, and incorporated in the organ built by Hill in 1875.

This organ represents a very remarkable development in the art of organ building. The new stops, — including a novel method of tone production, the Diaphones — are described in the "Glossary". There are no draw stops, but above the upper manual is a row of small ivory levers called "stop keys". The "Composition Keys" between the manuals, if touched in the centre give automatically an appropriate pedal, in addition to the particular stops acted upon; but if touched on one side do not disturb the Pedal department. All combination movements affect the stop keys themselves. The "stop switch" enables the player to prepare in advance any special combination of stop and couplers, bringing them into play at the moment desired. Great, Swell and Choir are furnished with a "double touch" which brings other combinations into play by means of an extra pressure or depression of the keys. The absence of mixtures in so powerful an organ is another striking feature. Brilliancy is sought from foundation stops through special methods of voicing. A new method of blowing replaces the ordinary form of bellows. An iron blowing machine is driven by a 6-horse-power gas engine. The air, drawn from the Cathedral, is compressed, and stored in the crypt. The console is mounted on castors, so as to be easily portable. A single flexible cable 1 $\frac{1}{4}$ inch in diameter connects it with the various parts of the organ. The Swell Organ is under the arch behind the Cantori Choir

blank walls above the Stalls. It will be available on the Solo, Choir, and Great (second touch) keys; meantime, the Pedal reed has been carried up to act as a Tuba.

stalls, enclosed in a "Box" of brickwork; Great, Choir, and part of the Pedal opposite, behind the Decani stalls; the Solo, and the main Pedal organs against the south wall of south west transept. The case of Messrs. Hills' large organ — the late Earl Dudley's gift, — screens these latter departments, and the carved oak case of the Console is from Sir A. Blomfield's designs.

PART V.

Glossary of terms used in connection with the Organ, and List of Stops.

Accessory stops (Ger. "Nebenstimmen") — any draw-stops in addition to the "speaking" stops: such as couplers and the tremulant, when a draw stop.


✓ *Acoustic Bass*, 32^{ft} pitch produced by deep fifths. (Pedal Quint 10²/₃^{ft} combined with 16^{ft} pedal stops).

Action, the mechanism between keys and pipes, draw-stops and sliders, etc.

Acuta, a compound stop usually including a tierce, and formed of the higher ranks of the harmonic series.

Aeoline, in continental organs a free reed stop of 8^{ft} pitch, and very soft tone. In some modern English organs the name is applied to a soft 8^{ft} metal stop of the Viol d'Amour type, in the Swell.

Anches (Fr.) Reeds.

Anemometer, or Windgauge, — a glass tube bent in the form of an inverted S — . Into the upper end water is poured. The other end is fitted into a socket and placed over one of the holes in the soundboard to ascertain the wind pressure, which is estimated in inches. The wind, passing up the lower end of the tube forces the water up through its U shaped bend. By adding weights to the bellows, the additional pressure forces the water still further up the tube, a measure in inches at the side of the tube showing to what extent.

Appollonicon, a large orchestrion constructed by Flight & Robson. It took five years to build, and was

opened in 1817. It had 45 stops and was playable from five manuals (as well as mechanically), there being a principal manual of five octaves with two manuals of two octaves at each side, the players sitting with their faces towards the audience. Purkis, Adams and other organists gave frequent recitals on it, and for about quarter of a century it was exhibited almost daily in St. Martin's Lane, London, being taken to pieces in 1840. In front there were large paintings, the central one representing Apollo, hence the name.

Aufsätze (Ger.) The pipes placed over organ reeds. *Backfall*, a wooden lever (see Fig. 9, p. 35).

Back-positive (Ger. Ruckpositiv), the manual sound-board and pipes placed at the player's back, as in the "Choir" organ of old cathedral organs in England. Trackers underneath the floor communicated with the keys.

Balanced pedal, a swell pedal which may be left partly open by the foot; hinged centrally.

Barem, an 8 or 16^{ft} stop of the Gedackt kind, of very soft tone.

Bärpfeife (Ger.), "Bear pipe", an obsolete reed stop of 8 or 16^{ft} pitch, partially covered; with tubes of peculiar form.

Baryton, a 16^{ft} manual reed stop.

Bass Flute, an 8^{ft} pedal stop of wood.

Bassoon, a reed stop forming the bass of the Oboe, or on the pedal, a 16^{ft} reed.

Bat pins, key pins flattened into the shape of a cricket bat.

Bauernflöte, a pedal stop of the Gedackt species, 4 or 2^{ft} pitch.

Baxoncello, Spanish equivalent for the Open Diapason.

Beard, a horizontal projection beneath the mouth of a pipe, particularly those of narrow scale stops, to help the speech. The side projections are called "ears" by English builders, by German builders all these projections are classed under the generic name of "beard"; the "ears" being known as "side beards", and the others as "under beards". This addition to the pipe often takes the form of a narrow roller or bar. In another kind, the "Kastenbart" of Herr Haas, a projection, either upright or at an angle, is placed considerably in front of the mouth, practically doubling the lower part of the pipe in depth. The

"Frein harmonique" introduced by MM. Gavioli & Cie, Paris, differs again from these. It consists of a thin piece of brass, T shaped, with its under part or stalk soldered to the foot of a metal pipe, or fastened with two screws to the cap when applied to a wooden one. The upper edge, corresponding in width to the mouth of the pipe is placed close to the narrow slit through which the wind finds egress. Beards affect the quality of tone, rendering it more "cutting", owing to the overtones being brought into greater prominence.

Bearings, the notes and intervals laid down as a standard for the tuning or temperament of the rest of the organ.

Beats, "The striking reinforcements of intensity at regular intervals which occur when two notes of slightly different pitch are sounded together" (Riemann). In a pipe violently out of tune with one of the same pitch belonging to another stop, the beats are rapid. In tuning, as the pitch approximates that of the pipe with which it is tuned, the beats become slower and slower, until, after only a slight "wave", they synchronise.

Bell Diapason, Bell Gamba, an 8^{ft} open stop of full tone, surmounted by an inverted cone or bell.

Bifara, a manual 8^{ft} stop with two mouths, one placed a little higher than the other, causing a slight wave, as in the Unda Maris.

Bleeding, puncturing the under part of the wind chest with holes to enable a little wind to escape from the grooves, thereby relieving "runnings" from one groove to the next, in work that does not fit accurately. The upper board and sound-board bars should be carefully fitted. A slight hissing noise betrays the presence of bleeding, when the keys are run over with no stops drawn.

Block. (a) The part in wooden pipes corresponding to the languid in those of metal ones (see Fig. 5). (b) In reed stops, that part which fits into the boot. (c) Piece of wood screwed to the traces, acted on by the mechanism of the composition pedals.

Block flute. A wide scaled 2^{ft} stop.

Blowing, methods of; the act of filling the bellows with wind; commonly effected in English organs by a wooden lever worked up and down by hand. Large continental organs are frequently blown with great ease by

the blower standing on planks of wood which sink two or three feet with his weight, gradually rising again as the bellows become empty. This is an excellent arrangement for galleries, or wherever the necessary space can be afforded at the back of the organ, and it is surprising that, so far as the author is aware, no English builder has adopted this plan, which relieves the blower of all fatigue. In common with some German builders, Mr. Lewis has sometimes employed a fly wheel acting on crank axles connected with a triple arrangement of feeders. As a motive power, superseding hand blowing, water power is often employed with excellent results where the supply is constant, and a sufficiently high pressure maintained. 60 to 80 lbs to the square inch is considered a good pressure; a low pressure of, say, 18 or 20 lbs can be used by employing a hydraulic engine of greater size and power. Automatic starters can be fitted to the console, and about a dozen different types of engines are advertised by their makers in the musical papers.

Where gas is cheap it is in favour as a motive power, but on account of the fumes and vibration caused by gas engines, a separate blowing chamber is a necessity. The "Otto" and "Melvin" Engines are well known types. A "Hydro-Gas" Engine has been patented by Mr. F. W. Durham, New Barnet, for which it is claimed that the working cost for moderate sized organs is only 1d per hour. A small gas or oil engine drives a force pump which draws from a tank of oil (or water and glycerine), supplying at any required pressure to a hydraulic engine, which is provided with suitable valves, operated upon automatically by the bellows themselves for regulating the speed. The exhaust of the hydraulic engine is led back to the suction tank to obviate waste, and belts and loose pulleys are discarded.

Electric motors have been brought to great perfection of recent years. When properly fixed they are simple, reliable and convenient. If the works are reasonably near, this system is, or should be, as advantageous as any, whilst the motor may be put into a little underground chamber outside the building.

A "Caloric Engine" (hot air engine) invented by Buschbaum, is mentioned and illustrated in Töpfer's „Theory and Practice of the art of Organ Building" and

Spiel of Halle has patented a "Petroleum Engine", similar in principle to a Gas Engine, calculated to cost in working 2d per hour, per horse power. These last two methods of blowing have also been utilised to a limited extent in England.

Body of pipe, speaking length from mouth to top.

Bombarde, Bombardon, powerful reed stops, 16 or 8^{ft} manual or pedal.

Boot, lowest part of a reed pipe, into which the upper part fits.

Borrowing, using pipes from one stop to form part of another.

Bourdon, the first pedal stop usually inserted; of wood, 16^{ft} pitch, stopped pipes.


Break, (see compound stops, p. 29). Change in the character of the pipes generally, as from stopped to open, or from reeds to flue pipes, as in the highest notes of some reed stops.

Brustwerk (Ger.) Applied to the sound board and pipes in the centre of the instrument, and belonging to the 2nd or 3rd manual.

Building frame, structure supporting and enclosing the pipes or mechanism.

Bushing, clothing or felting parts in the action which are subject to friction, so as to prevent the clicking and rattling noises common to old or badly made organ mechanism.

Button, a little nut of leather passed over tapped wire, for regulating the action in tracker work.

CCC, 16^{ft} pitch; CC, 8^{ft}; tenor C, 4^{ft}; middle C, or C', 2^{ft}, C'' 1^{ft}; C''' (2nd line above ) 6 inches in length.

C under C. Centre C of the Pedals; being directly underneath and in line with middle C of the manuals.

C side; C# side. The "bass" and "treble" sides of the organ respectively, the pipes being placed alternately (see p. 34).

Calcant (Ger.) Bellows treader, (see "Blowing, methods of").

Cap. (a) The covering in front of the block, and directly beneath the mouth of a wooden pipe. (b) Metal cover regulating the power of the pipe in reed stops.

Carillons (Ger. Glockenspiel). A set of bells or steel bars playable from a keyboard, sometimes added to the 4th or 5th manual of a large organ, from Tenor F upwards.

Celestina, a soft 4^{ft} stop.

Centre pins, the pieces of bent wire passed through the ends of the traces in the draw stop action, etc. They are, (or should be) secured at the end to prevent working out.

Chorus, in organ phraseology, the mixture work.

Ciphering (Ger. "abheulen") the sounding of pipes through some failure in the action, which may arise from a variety of causes: — damp; keys becoming warped or wedged together; pallet spring too weak, or its guide pins too tight; dirt fallen on the pallet and keeping it partly open; a button too tight; backfall disconnected; pedal spring broken; pull down wire become rusty or bent, and refusing to return, etc.

Clarabella, or *Claribel* (Willis), an 8^{ft} open wood stop of full tone, the mouths often, though not always, inverted. It is generally placed on the Great, and was introduced into English organs and so named by Bishop. It resembles the "Portunal" of many German organs, and is frequently named "Melodia" in American specifications.

Clarion, the only 4^{ft} reed in general use. Of ringing brilliant tone, available only in the full organ, or sometimes with the Swell 8 and 16^{ft} reeds when placed on that manual.

Clarionet or *Clarinet*, an 8^{ft} solo reed stop, with tubes of half length; the first distinctively "solo" register usually added to small organs.

Clarionet Flute. An 8^{ft} stopped pipe with a hole through the stopper. Unsuitably named, being a *variant* of the Stopped Diapason.

Clear Flute, a 4^{ft} stop with bevelled block and inward bevelled mouth, without nicks, of firm, full tone, introduced by Kirtland & Jardine.

Cone, tool used in tuning open pipes. The hollow part pressed over the top of the pipes, forcing the edges inward, flattens; reversing the cone, and pressing with the pointed end inside, sharpens. Six or seven cones are necessary for pipes of various size.

Console, the key boards, draw stops with accessories

under the immediate control of the player, sometimes detached from the main body of the instrument.

Contra Trombone, name given to a 64^{ft} reed made by Hill & Sons for their organ at Sydney. It is a "striking" reed of true length, provided with wooden tubes.

Contra, 8ve below, as *Contra Fagotto*, *Contra Gamba*, etc., 16th pitch.

Conveyed pipes, those separated from their sound-board (as in front pipes) the wind being conveyed by metal tubes which should be "knuckled" where necessary, i. e. having no right angles whereby the wind receives a partial check, interfering with promptness of speech.

Coppel or *Copula*, a Coupler, sometimes also applied to stops in German organs which require others to be blended with them.

Cor Anglais, an 8th free reed of distinctive quality of tone.

Corno di Bassetto, 8th reed similar in quality to the Clarionet.

Cornet, Echo Cornet, Dulciana Cornet; Compound stop of three or more ranks. In old German organs a pedal reed of 1, 2 or 4^{ft} with snarling tone, called also "Zinken".

Cornocean, an 8th reed, somewhat smoother in tone than the Horn, placed in the Swell.

Covered reed (see *Cap*). Besides the assistance afforded in regulating the tone (not tuning) the caps assist in keeping out dust from the pipe.

Cremona, a corruption of the German "Krummhorn". It is really a Clarionet.

Crescendo pedal, as distinct from the Swell pedal, is a mechanical arrangement for throwing out in succession all the stops of an organ from the softest to the full power, in some cases opening the Swell shutters also. The idea was introduced in Messrs. Hill's Panopticon organ, but has been developed in modern German organs whilst remaining dormant in England up to the present. In German organs, a wheel arrangement is placed by the side of the balanced pedal, in the middle of the knee panel. The reverse movement of the foot gives a Decrescendo (Ger. Rollschweller, Crescendowerk). See specifications by Schlag pp. 96—98, and Lewis pp. 102—104.

Cymbel, Cymbal, a mixture.

Cymbelstern, a quaint device in old German organs, whereby a gilt star attached to the front pipes was made to jingle, being set in motion by a current of air, and having its special draw stop.

Decima, 10th, a mutation rank; same as Tierce.

Diagonal drawstop jambs. Those placed at an angle for the player's convenience, when there are several rows.

Diagonal feeder, hinged at one end, causing the board to move at an angle.

Diapason, Open 8^{ft}, the chief foundation stop of an organ, open metal pipes (Fr. Montre, Ger. Principal). In a general sense "the Diapasons" include all the 8^{ft} stops which are grouped together on the draw stop jambs, excluding, of course, all reeds and solo or fancy stops, such as the Voix Celeste; but the introduction of string toned Gambas of marked character greatly alters the tone quality. 16^{ft} on Pedals, wood or metal.

Diapason, Stopped, 8^{ft} wood or metal, of soft flute-like tone.

Diapason, Double Open, 32^{ft} pedal stop, wood or metal.

Diapason Phonon, 16 and 8^{ft} open pipes of wood and metal, of very full tone. Examples occur on the Great manual of the Worcester Cathedral organ.

Diapered pipes, pipes which are decorated with designs in color to form an ornamental front, which may be composed either of "speaking" pipes, or entirely or in part of dummies.

Diaphone. (See Part I, p. 20.) The action of the Diaphone here illustrated is as follows: —

Wind from the organ bellows enters the pipe foot F, and raises the pressure in the chamber C. The air in the chamber will press upon the back of the valve V, tending to keep it closed. It will press also upon the bellows or motor M, and as this bellows has a much larger area than that of the valve, it will instantly collapse, and, through the medium of the tail piece T, will pull the valve V off its seat and allow the compressed air in the chamber C to rush into the resonator or pipe P. Owing to the inertia of the column of air contained in the pipe P, a momentary compression will take place at the lower end of the pipe, and the pressure of the air inside the motor M will, in consequence, be raised. The motor having now increased

pressure both sides, will no longer keep the valve off its seat, and the spring S will open the motor and close the valve. The compression caused by the admission of the puff of air into the lower parts of the pipe P will be followed by the usual rarefaction, and as this rarefaction will exhaust or suck the air from the inside of the motor M, the valve will again be lifted from its seat, and the cycle of operations mentioned above will be repeated as long as the wind supply is kept up. A series of regular puffs of wind will thus be delivered into the lower part of the resonator, resulting in a musical note. The pitch of this note depends upon the period of the resonator, for the movements of the valve are timed and governed by the vibrations of the air in the pipe, acting on the inside of the motor, M. If the pressure of wind be increased, the strength of the air puffs will be increased also and the column of air in the pipe will, therefore, be thrown into more intense vibration. These vibrations of greater amplitude will act more energetically on the interior of the motor, and will increase the arc of movement of the valve. The number of vibrations per second will remain unaltered, being still governed by the periodicity of the pipe. If the wind pressure be reduced, the puffs of air will become weaker, and the valve will not open so far, but the frequency of vibrations will remain the same. This means that the diaphone is tuned like ordinary flue pipes and will keep in tune with them; also that the pressure of wind (and consequently the power of the tone), may be varied without affecting the pitch. The form of the pipe or resonator has its effect upon the quality of the tone; if made cylindrical, it will reinforce only such of the odd numbered partials as may be present

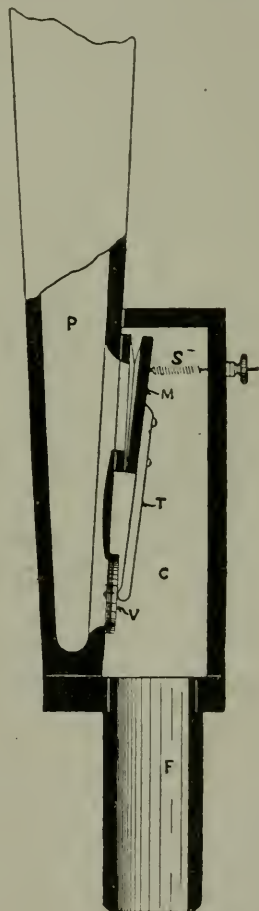


Fig. 17. Diaphone.

(leaving evenly numbered partials in their original weakness), while an inverted cone will reinforce all the partial tones that are generated. In the former case the peculiar hollow tone of the clarinet is reproduced. The shape of the resonator also has its influence upon the movements of the valve admitting the puffs of air. Fixing resonators of particular types causes the valve to deviate from its normal course, and to hurry its movement at one part and retard it at another part of the cycle, thus altering the form of the puffs of air.

But the tone quality is chiefly determined by the forms of the admitted pulses of air, and in the Diaphone here illustrated, the valve V admits and shuts off the air in sudden puffs, so that pure foundation or flute-like tone is not possible. Tones resembling a pedal violone of strong intonation, a hard, powerful and smooth tuba, the middle register of a clarinet, and a smooth oboe tone have been produced from it.

In other forms of the Diaphone the valves are quite differently arranged; in one important form a "roller" valve is used, from which flute-like or diapason quality is obtainable as well as tones of a reedy character. Tones of great power, without deterioration in quality, can be got from a light wind pressure by means of this invention, and if an enormous volume of tone either of Tuba or Diapason quality be desired, one form or other of the Diaphone can supply it from a single set of pipes. Some kinds demand a very perfect form of electric action to secure prompt speech, tracker or tubular pneumatic proving unsuitable.

Diaphonic valves can also be attached to an open diapason having an ordinary flue mouth, thereby increasing the amplitude of vibration (and consequently the power of the pipe) whilst retaining the diapason quality.

Direction pins, placed inside the wind chest to guide the pallet.

Dolcan, an 8^{ft} open stop, the pipes being wider at the top.

Doppel flöte, a stop with double mouth (see Fig. 8e, p. 33).

Double English Horn, a heavy reed stop, 16^{ft}, of brilliant intonation, found in some of the Hope-Jones organs. It is fitted with flat reeds.

Double pallet, two pallets, one opening a little before the other, whereby the touch is lightened.

Double tongue. Reed stops of the Trumpet class have occasionally been made on the continent with two tongues, placed on opposite sides, the vibrations, of course, synchronising. Double tongue reeds have also been used in this country in the Hope-Jones organs.

Doublette, (Fr.), the Fifteenth; also applied in English organs to a stop of two ranks, 15 and 22.

Double touch. By a slight extra depression of the key, other stops are brought into play. In 1862 an organ with tracker action and double touch, built by Mr. Henry Wedlake from the designs of Mr. A. L. Tamplin, was exhibited in London. The same builder afterwards adapted it to the pneumatic action, and it has been introduced into a few modern organs on the electro-pneumatic principle.

Draw stop jambs, the woodwork pierced with holes for the drawstops to pass through. These in old organs were usually four-sided; in all modern organs round draw stops are preferred.

Druckwerk. Ger. for tracker action.

Dulciana, a metal 8^{ft} open stop of narrow scale and thin intonation, first introduced into England in 1754 by Snetzler, in his organ at Lynn Regis.

Duplication, as used in the Casson system, is the employment of a stop in two or more divisions of the same keyboard, separate draw stops being provided.

Ears, the projections at the side of the mouth of a pipe to improve its speech.

Echo Cornet, a compound stop in Swell or Echo organ of delicate intonation.

Echo organ. In old organs before the invention of the Swell this formed the third manual. In modern organs it is a fourth or fifth manual, usually enclosed in a Swell and placed at a distance from the rest of the instrument.

Equal temperament, the equal division of the sounds within the octave to suit our modern keyboard arrangement of it into 12 semitones only.

Escape of wind. Loss of wind; may be caused by small hole in bellows or feeders; wind trunks slightly open at the joints; pull down wires working through too large a hole; wind chest not tightly fitting at the joints; or front board not screwed tight enough.

Euphone (Fr.) A 16^{ft} reed with broad tongues.

Fan frame, backfalls opening out like a fan.

Fan trumpet, front pipes arranged in the form of a trumpet.

Feeder, part of bellows which supplies the reservoir.

Fiddle G, 4th space bass clef, lowest string of the fiddle.

Fistula, term applied to organ pipes by Latin writers.

Flageolet, 2^{ft} open metal stop.

Flat 21st (sometimes termed the "sharp 20th") a mutation rank occasionally introduced into the mixtures of large organs. Cavaillé Coll in France, Walcker of Ludwigsburg and Jackson of Liverpool have used it.

Flautina, a sweet and clear 2^{ft} metal stop, lacking the brilliancy of the 15th.

Flauto traverso, or German Flute, 8 and 4^{ft} pitch, double length pipes in treble.

Flue pipes, those in which the wind, passing through a wind way, or flue, impinges against a sharp edge (upper lip), part entering the body of the pipe, and part passing out at the mouth; termed thus in contradistinction to reeds.

Flue-work (Ital. Organo di legno), name given to a small organ containing no reed stops.

Flute, 8 and 4^{ft} pitch, open or stopped, metal or wood pipes of sweet, clear tone, more or less resembling their orchestral prototype. Flutes of 4^{ft} pitch were first introduced into the organ by Compenius in 1590.

Flute à cheminées, 8^{ft} "half stopped" pipes, having a tube or hole through the stoppers.

Flute à Pavillon 4^{ft} pipes surmounted by a bell.

Flute d'Amour, 8^{ft} and 4^{ft}; a stop in Messrs Lewis's organs, "Salicional" scale, but differently voiced.

Flute Bass, an 8^{ft} pedal stop of wood.

Flute Harmonique, 8 and 4^{ft} open metal pipes of double length made to speak their octaves by being overblown, invented by Cavaillé Coll; the most powerful of all flute stops.

Foundation stops, as opposed to "mutation", include all the stops of octave or unison pitch, i. e. C on the C key, the 8^{ft} being the *chief* manual F. stops, 16^{ft} on the pedals. By some writers stops of 4 and 2^{ft} pitch have been erroneously included amongst the "Mutation" stops. These smaller 8^{ve} stops are further classified in Germany as "Secondary stops" (Seiten-Stimmen).

French feeders, name given to auxiliary bellows or reservoir.

Fugara, 8^{ft} open metal or wood stop of cutting, Gamba-like quality.

Full Organ, all stops except "solo" stops. In accompanying, a wise discretion must be exercised, and the directions modified accordingly, especially in old services and anthems with organ parts written for the thin-toned organs on a light wind pressure, of the old English builders.

Gamba, 8^{ft} open metal. A distinct class of stops of pungent "string" quality of tone, of comparatively modern introduction (though found in German organs earlier), old English organs depending upon open and stopped Diapasons for their 8^{ft} foundation tone. The "German Gamba" is powerful in tone but of slow speech, requiring to be helped by a Hohl Flute or Clarabella, the two stops of opposite character forming a peculiarly rich combination. The French "Viole de Gambe" is more prompt but less powerful. In the English Viol di Gamba, the pipes in addition to being cone shaped, open out at the top like an inverted bell, named "Cone Gamba" by Messrs. Hill; "Bell Gamba" by other builders. Gambas are tuned by a slot; ears, a beard, or a little roller placed just below the mouth assist the "cutting" quality of tone aimed at. A 4^{ft} variety of the Gamba is by some makers called a "Gambetta", and a "Contra Gamba" 16^{ft} frequently replaces the more usual Swell Lieblich Bourdon in Mr. Willis's organs.

Gamut G, the first line of the bass clef.

Gedackt, or Gedact. German term for covered or stopped pipes; sometimes incorrectly rendered "gedacht".

Geigen Principal, 8 and 4^{ft} open metal pipes, also called "Violin Diapason", of bright telling quality, but not so bold and full as the Open Diapason.

Gemshorn, 4^{ft} and 2^{ft} open metal, also 8^{ft} in German specifications, thin and reedy tone, pipes tapering at the top to $\frac{1}{3}$ rd the diameter at the mouth. (See Fig. 7, p. 32.)

Glockenspiel, Jeu des clochettes, 1^{ft} open metal stop, intended to imitate the clear, ringing tone of a small bell. In the "Celestial Organ" in Westminster Abbey it is of 3 ranks. The name is also applied to the Carillon, in which real bells are struck, by mechanism connected either with one of the manuals or sometimes with the pedal. In some continental organs figures of angels,

forming part of the case work, visibly struck the bells with hammers.

Grand Chœur (Fr.), (a) Full Organ, (b) a Postlude.

Great Organ (Ger. Hauptwerk, Fr. Grand Orgue). The principal manual; placed lowest in a 2 manual instrument; when there is also a "Choir" organ, the Great is next above it. On the "Great" are concentrated the more powerful and largest scale stops, except those of special character, such as the Tuba Mirabilis, usually placed on a fourth manual (Solo organ).

The term "Great" has been used in England more than four centuries, and is found in the "Fabrick Rolls of York Minster" for 1469.

Grooving, conveying the wind along the grooves or channels so as to make one set of bass pipes do duty for another stop. The Dulciana (or Salicional) and L. Gedackt of small organs have their lower 12 notes frequently in common in this way, for cheapness, although the tone quality of the two stops is quite distinct. When done, it should always be fairly stated in a specification; against the "Tenor C" stop, "Bass derived" and the actual number of pipes given.

Guide pins, same as direction pins.

Gussets, the leather at the edges of the bellows, uniting the ribs.

Halb-Orgel (Ger.). Half organ, one without 16th stops.

Half length pipes, those of half the speaking length. In addition to the "stopped" species, some of the reeds, such as the Clarionet, have pipes of half length.

Half stopped pipes, those with a hole or chimney through the stoppers.

Half stops, those which do not extend throughout the entire compass; all "Tenor C" stops. In the best modern work the Voix Celeste is almost the only stop left thus incomplete.

Harmonic Flute, 4th open metal pipes of double length with a small hole bored half way; of sweet and clear tone, generally the 4th stop chosen, next to the "Principal" for the Great Organ.

Harmonic Piccolo, a 2nd stop of similar structure to the preceding.

Harmonic stops, those which yield harmonics, such as the Flute harmonique of Cavallé Coll, which, by overblow-

ing, gives the first harmonic, i. e. the octave above — 4th C from an 8th pipe.

Hautboy, same as Oboe, 8th reed.

Hauptwerk (Ger.). The Great or Principal Manual.

Hediaphon, 8th pitch, an invention of Mr. Hope-Jones. The tone is produced, not from pipes, but from resonant gongs, by means of an alternating current of air.

Hintersatz (Ger.), "behind set", in very old organs applied to mixtures placed behind the Principal to strengthen it.

Hohl flute, 8th open wood (occasionally metal) of hollow tone, useful for blending with other stops. Pipes with very wide mouths, cut up to a considerable height. Made by Schultze with the mouth on the broad side of the pipe, also in three sided form.

Horn, 8th reed, a powerful manual reed stop belonging to the Swell department. Its name is not happily chosen, the orchestral horn not being a reed, but yielding a smoother and more luscious tone than can be produced from reeds.

Horn Diapason, an 8th open metal stop sometimes met with as the second Great Open Diapason in organs by Walker and others.

Hummel, or *Hummelchen* (Ger.), a stop in old organs with two pipes constituting a drone bass, either C and F or C and G; obsolete.

Hydraulic organ (see Part. I, p. 2).

Hydraulic engines (see "Methods of Blowing", p. 109).

Infra bass (Lat. Ger.) A stop of 16th pitch.

Jeux des Fonds (Fr.) Foundation stops.

Just intonation, perfectly in tune.

Kalliope, 8th and 4th metal solo stop invented by Mr. Hope-Jones.

Keraulophon (Gk. "Horn flute"), 8th open metal, frequently to Tenor C only. A species of Gamba, of full tone, about the scale of a Dulciana, but less tranquil in tone. It is tuned by a sliding cap, which has a small hole bored through it at the distance of one diameter of the pipe from the top of the cap. Invented by Gray & Davison, and first introduced into the organ at St. Paul's, Knightsbridge, in 1843.

Key slip, a slip of wood between the Key boards.

Kinura, 8th reed stop of brass, a very soft echo reed stop in the Hope-Jones organs.

Knee panel, or knee board, the board in front of the player's knees.

Knocking up cup, a heavy cone shaped tool used by tuners to reduce (by its weight and pressure) the wind hole of pipes.

Kollektivtritte (Ger.) Composition pedals.

Labial pipes (Lat. Labium, the lip), all pipes with mouths, as opposed to reeds.

Languid, or language, the flat metal plate fixed across metal pipes at the top of the foot, and presenting a straight edge at the mouth.

Larigot, the 19th (8^{ve} 12th) open metal pipes 1 $\frac{1}{3}$ ft, also called Petit nasard in France. It forms part of the mixtures and is no longer made to draw as a separate stop.

Leaf, the flattened portion of a pipe through which the mouth appears.

Lieblisch (Ger.), a prefix meaning "lovely", "sweet", applied to a distinct class of stopped pipes of smaller scale, and less fluty or full tone than the old English "Stopped Diapason". Sometimes the word is absurdly used by itself as a noun.

Lip pipes (see Labial pipes). The formation at the top of the mouth is termed the upper lip, the thin stream of air being directed against this produces the sound; if "cut up" too high the speech will be slow, and its proper setting is one important factor in skilful voicing.

Louvres (Fr.). The Swell shutters.

Manualiter (abbr. man., m.), for the manuals alone.

Melodia, American name for an 8^{ft} stop of the Clarabella or Hohl Flute kind.

Metechotic Action. A method of duplicating stops, patented by Brindley & Foster in 1889. By means of pneumatic contrivances, certain stops can be utilised on separate manuals, or on manual and pedal. For example, a Lieblisch Bourdon 16^{ft} or a 16^{ft} reed on the Swell, may, through separate draw stops in the pedal department, form a soft and expressive bass, whilst remaining inoperative on the Swell Keys unless the stop handle in that department be also drawn. A much softer bass than that obtainable from the unenclosed pedal organ is thus secured, whilst the player is free to use simultaneously on the Swell any combination of 8 or 4^{ft} without doubles. Similarly, a

Swell stop can be transferred to the Choir, either at the same pitch, octave above or sub-octave, as arranged, and there used as a solo stop, accompanied on the Swell by other stops, both solo and accompaniment being affected by the Swell Pedal. Without increase of ground space, new effects become possible, which could not otherwise be obtained except at great cost. Great judgment is required in selecting suitable scales when one rank of pipes does duty at two different pitches.

Mitred pipes, pipes in which there is a bend; frequently done where there is insufficient height. Reeds are rather improved than otherwise, by having their tubes mitred.

Mixture see Compound stops, p. 29.

Montre (Fr.). Open Diapason.

Mop, small tool formerly used by tuners to silence some of the ranks in a compound stop whilst tuning one rank.

Mounted Cornet. A mixture stop containing a Diapason as one of its ranks, the whole proceeding without break, and occupying a small raised soundboard of its own. Used to hide the "breaks" in the mixtures of very large organs; formerly used as a solo stop.

Mouth, the opening above the foot of a labial pipe.

Musette (Fr.), a free reed of nasal tone, found in French organs.

Mutation stops, those which do not give a note corresponding to the key; includes all third and fifth sounding ranks. The 4 and 2^{ft} stops are sometimes incorrectly classed as mutation stops.

Nasat, (Ger.), Nasard (Fr.), a 12th 2²/₃^{ft} of somewhat reedy or nasal tone; of stopped pipes usually in foreign organs. According to Seidel, the stop originated in the Netherlands.

Nason, a 4^{ft} stopped wood flute in old organs.

Nicking, the process of making little notches against the block or languid of the pipes, and at the lower lip, forming part of the art of voicing.

Notchers, files of various size and shape used to make the above nicks or notches.

Oberwerk (Ger.), the upper manual. In old German organs of two manuals, the "Oberwerk" would correspond to the "Choir" of English organs, the pipes being unenclosed.

Oboe, 8^{ft} reed, generally the first reed placed in the organ, belonging to the Swell.

Octave, same as Principal.

Octave Clarion, 2^{ft} reed, the smallest reed made, obsolete.

Octave Hautboy, 4^{ft} reed, obsolete.

Octave Quint, $2\frac{2}{3}$ ^{ft} pitch, open metal; a Twelfth.

Open Diapason, 16^{ft} on Pedal, wood or metal, 8^{ft} on the manuals, metal. A round, full tone of pervading quality is, or should be, its chief characteristic. When of 16^{ft} pitch on the manuals it is termed a Double Open Diapason. Similarly, by Double Open Diapason on the Pedals, a 32^{ft} open stop is understood (see p. 76).

Ophicleide, 16^{ft} pedal reed of great power.

Orchestral Flute, 4^{ft} open metal, a flute voiced specially for the "Solo" organ to imitate the orchestral instrument.

Orchestral Oboe, 8^{ft} reed, voiced specially for the "Solo" organ, more powerful than the Swell Oboe.

Over blowing (a), attempting to force too much wind into the bellows, disregarding the limit shown by the lead marker. (b), pipe speaking its octave through (i) too large wind hole, (ii) languid too low, (iii) mouth too low, (iv) upper lip too convex, (v) lower lip too concave. The reverse of these faults causes slowness of speech.

Pallet (see Fig. 9, p. 35).

Passage board, a board placed by the side of the sound board, or through the ranks of pipes for the tuner to stand on.

Pedal Octave, a pedal coupler bringing on the pipe or pipes an 8^{ve} above in addition to the pedal note actually played. For its proper effect each stop on the pedal organ should be carried up an octave higher than the compass of the pedals, i. e. 42 pipes instead of 30.

Phoneuma, a delicate 8^{ft} stop of metal in the Hope-Jones organs, of the nature of Voix Celeste.

Piccolo, 2^{ft} stop, wood or metal.

Pieno (Ital.), full; organo pieno, full organ.

Portativ (Ger.), a small portable organ (see p. 12).

Portunal, an 8^{ft} stop of the Clarabella kind in Continental organs, but with pipes larger at the top than at the bottom.

Posaune, 8^{ft} on manuals, 16^{ft} on pedals, a powerful reed stop; being the German equivalent for Trombone.

Positiv, originally signifying a stationary organ as opposed to the *Portativ*, a small organ borne in processions. It had generally only labial pipes, and mostly of the stopped kind, the term being applied to a small chamber organ. It afterwards became applied in France and Germany to the department corresponding to our "Choir" organ (see "Back-positive").

Positive Organ, name given to a small organ invented by Mr. T. Casson, and made by Mr. W. R. Andrew, High Road, Kilburn. It is intended to replace the harmonium or American organ in small churches, mission chapels, etc. It is a one-manual organ, limited to the vocal compass, FF to A, and provided with foot blowers. A "Double Bass" (Stopped pipes) descends to FFF, 12^{ft} tone, acting, from mid. C downward only upon the lowest note played. A "Melodic Diapason" acting on the Open Diapason from mid. C upward, gives only the highest note played. Thus, with these stops drawn, hymn tunes and chants in ordinary four-part harmony have the effect of being played upon a small organ of two manuals and pedal, with the melody brought into prominence upon the "Great" organ.

Prestant (Lat. *præstare*, to stand before), the 4^{ft} Principal in French organs; applied to the 4^{ft} pipes forming the front, in contradistinction to those of 8 and 16^{ft}.

Principal, 4^{ft} open metal pipes of the open Diapason kind, but a size or two less in scale. 8^{ft} on the pedals. In German and Italian organs the term is applied to the Open Diapasons. The English Principal is the chief 4^{ft} stop, and it is only in this sense, and the fact that it is the one chosen by tuners to take their "bearings" from, that it can be made to justify its title, the 8^{ft} Open Diapason being the "principal" stop in an organ. For this reason the Principal has been, by some English builders, re-christened "Octave".

Progressio-harmonika, a mixture in German organs beginning with 2 ranks, 17 and 22; the 15th being added at C, 2nd space, bass clef, later the Quint, and so on up to 6 ranks in some organs; a large scale mixture of full bright tone.

Prolongement harmonique (see pp. 60 and 98).

Pull down wires, the wires which, passing through the wind chest, pull down the pallets.

Pyramidon, 16 or 32^{ft} wood, a pedal stop made by

Flight after the design of the Rev. Sir F. A. G. Ouseley, the pipes being four times as large at the top as they are at the mouth, producing the CCC, 16^{ft} pitch, from a pipe 2^{ft} 9ⁱⁿ long, 2^{ft} 3ⁱⁿ at the top, and 8 inches at the block.

Quer flute (see Flauto traverso.)

Quint, the largest of the "fifth" sounding mutation ranks, drawn as a separate stop. 5¹/₃^{ft} on the manuals, 10²/₃ on the pedals where it is often met with in lieu of a 32^{ft}; its beats with the 16^{ft} resembling more or less successfully a 32^{ft} stop. In a few German organs a "Gross Quinten Bass" has been inserted on the pedals, giving tones from stopped pipes a fifth above the 32^{ft}, i. e. 21¹/₃^{ft} tone; but the experiment has found no imitators amongst the designers of the largest organs of recent times.

Quintatön, Quintadena, or Quinta ed una; a foundation stop of narrow scale, stopped pipes 16 and 8^{ft} pitch, in which the fifth or 12th is prominent; used chiefly in combination.

Quint Flöte, a narrow scale Octave Quint, with the flute quality of tone.

Rauschpfeife, Rauschquinte, a two rank mixture in German organs, composed of a fifth and octave. The fifth being lowest, the interval of a fourth was formed, consequently it was also known as "Rauschquarte".

Regal, a small portable organ composed of a few reed pipes, sometimes made to fold up into the form of a church Bible, and then called "Bible Regal". Amongst the musical instruments in Henry VIII.'s household, an inventory includes "13 pairs of single regalls" and "5 pairs of double regalls" (with two pipes to each note) and as late as 1773 there was, attached to the English court, an official "Tuner of the Regals". The term was also used in connection with several obsolete reed stops in German organs, "Geigen regal", "Harfen regal", etc.

Register, (a) a slip of wood, perforated, through which the trackers pass when long (as might be the case in the middle of f, Fig. 9, p. 35). It prevents the trackers from rubbing or rattling against each other, and in the case of horizontal pedal trackers, passing underneath the bellows, keeps them off the floor. (b) Anything that serves as a guide is so termed by builders; thus in Fig. 12, the counterbalances, g. g, are called the bellows register, and 2 shows a register for the bellows handle. (c) A term sometimes used for the draw stops.

Relief pallet, (a) a divided pallet, (b) bellows waste valve.

Resonance. For proper musical effect, buildings in which an organ is placed should have a certain amount of echo when empty, as the clothing of a congregation, or even the cushions and hassocks in pews, greatly absorb and deaden sound. Excessive resonance is, however, just as distressing to the ear as the opposite fault; quick passages upon the full organ become a meaningless jumble, and the ear speedily tires in its efforts to follow the interweaving of parts. When this is the case, the player can, however, by slightly modifying the time and with a lighter and thinner registration do much to make fugal passages and quickly changing harmonies intelligible to listeners at the farther end of the building. Excessive resonance may be cured by festoons of cloth suspended from the roof; a "dead" building is generally hopeless, owing to low roof and various obstructions offered to the sound waves.

Resultant tone. An acoustic effect. The vibrations of the Pedal Quint, $10\frac{2}{3}$ ft with the 16 ft pedal stops give the effect of a 32 ft (see Quint).

Return pedal pipes. An objectionable feature in old organs whose manuals extended to GG. When pedals having CCC for their lowest sound were added, beginning at the lowest CC of the GG pedal board, a return or repeat was caused in the pedal scale, the notes in the middle of the pedal board from CC to G being lower than those derived from GG to CC of the manuals; resulting in the mutilation of many important pedal passages.

Return ranks. In mixtures, the intervals beginning at CC are not maintained to the top of the Key board, but "repeat" at suitable stages some of the lower ranks (see Compound stops, 29).

Reversible Keyboards. The keyboards turned around to enable the player to face choir, congregation or conductor, according to circumstances.

Robbing. In defective work the pitch will sometimes flatten when several foundation stops are drawn, sharpening again when suddenly reduced to one or two, owing to a note belonging to one set of pipes taking the wind

from that of another. The bars will probably be found too shallow, or the pallets not large enough.

Rohr flöte, literally "reed flute", name of a partly stopped 8^{ft} pipe in English and German organs, similar to the French Flûte à Cheminée. It derives its name from the reed or tube — often simply a hole — through the stopper, and the tone is akin to that of a Stopped Diapason, but clearer, bearing no resemblance to the tone of reed stops. In continental organs, stops of 16 and 4^{ft} pitch are also met with bearing this name.

Rohrschelle, a *Rohr flöte* of 2 or 1^{ft} in German Organs.

Roller, an iron or wooden bar working on pins inserted at each side into a block or stud, and having an arm projecting at either end to which trackers are attached. The movement is thus conveyed sideways (see Fig. 10).

Rückpositiv (see "Back-positiv").

Runnings, the sounds caused by the wind running into the grooves of pipes adjoining those that are being played, or along the slider (see "Bleeding").

Salicional, or *Salicet*, (Ger. "Weidenpfeife", "willow pipe") an 8^{ft} open metal stop of narrow scale, similar to a Dulciana, but with larger mouth, and usually fuller in tone.

Salicet flute, a 4^{ft} variety of the above.

Scale, the diameter of a pipe. Rightly proportioned scales, good substance and quality of material with artistic voicing, good steady wind supply and favourable position are the important factors in the speech of a pipe. Mr. Lewis gives the following as a good scale for an 8^{ft}. Open Diapason, to weigh 4 cwt., containing one half or more of pure tin:— CC, diameter 6 in.; C, 3¹/₂ in.; Mid. C, 2¹/₈ in.; 1^{ft} C 1¹/₄ in., 6 in., C 3³/₄ in. A second Open Diapason on the same manual would be made one or two pipes less in size, not only to obtain a less powerful stop for variety, but because two unison pipes of the Open Diapason kind, precisely alike in size and make, "sympathise" to such an extent that the power from the two ranks is not appreciably more than from a single rank. The Principal, Twelfth, Fifteenth, etc. are, as regards their scale and make, simply smaller "Diapasons", their pitch

necessitating the difference in classification. Mr. Alfred Palmer, pipe maker (successor to Courcelle), gives the following scale for a chamber organ Open Diapason: —

CC, diameter 5 in.; C $2^{10/12}$ in.; Mid. C $1^{5/8}$ in.; 1^{ft} C 1 in.; top G $9/16$ in.

Principal, a semitone less than Open Diapason.

Twelfth, a semitone less than corresponding pipe of Principal.

Fifteenth, a semitone less than corresponding pipe of Twelfth.

Dulciana (in metal throughout) CC, $3^{5/16}$ in.; C 2 in.; Mid. C $1^{1/8}$ in.; 1^{ft} C $1^{11/16}$ in.; 6 in. C $3/8$ in.

The CCC of a Pedal Open Diapason in wood measures about $13 \times 11^{1/2}$, the Bourdon 9×8 , a Violone 7×5 . The late Dr. L. G. Hayne caused some Bourdons to be made of $1^{1/2}$ in. timber, $13 \times 11^{1/2}$ at CCC, inside measure, in order to obtain pure notes free from harmonics, the pipes being known as "Hayne's tubs".

In reed stops, the tubes of Horn and Trumpet will measure at the top from about 4 to 5 inches at CC, whilst the Clarionet, with straight tube and half length pipes will be but $1^{3/4}$ inches at CC.

Schalmei, (Fr. *Chalumeau*, from Latin *Calmus* a blade). A reed stop of the Musette kind, 8 or 4^{ft} in old organs, imitating an old instrument used by shepherds in the south of Europe.

Scharf, or Sharp mixture. Of three or more ranks including a tierce.

Schnarrwerk, German term for a regal, also applied to the reeds of an organ.

Schreierpfeife, or Schryari, name derived from an obsolete wind instrument, and applied to a shrill mixture stop, beginning with 1^{ft} and containing three ranks of narrow scale pipes.

Schwebung, the Tremulant in German specifications.

Schweizerflöte, "Swiss flute". A small scale open metal stop with beards, of penetrating tone in German organs. Its intonation is rather difficult to obtain, according to Seidel; Riemann* observes "the pipes are easily *over-blown*; the stop is generally used in combination with other 8^{ft} stops".

* Dictionary of Music. Dr. Hugo Riemann.

Schweizerpfeife and *Schweizerfloten* bass are 4 and 16^{ft} varieties of the same.

Schwiegelpfeife, from an old German word, *suegala* meaning a pipe. A narrow scale open metal foundation stop in old organs.

Serpent, an obsolete pedal reed stop of 16^{ft}, imitating the wind instrument of the same name.

Sesquialtera (see Compound stops Part II). Seidel describes it as a two rank mixture, and says "The two ranks are a fifth and a third, the latter being raised an 8^{ve}, properly therefore, a fifth and a tenth. In this way these two intervals (the tenth above the fifth) form together a *sixth* or *sexta*, whence the name sesquialtera."

Shade, (a) a metal flap whereby the *power* of a reed pipe is regulated (not tuned), (b) placed over a flue pipe it is used to tune by, (c) a pipe whose intonation is affected by any external obstruction is said to be shaded.

Sifflöt, from Fr. *siffler*, to hiss, a 1 or 2^{ft} open metal stop of wide scale.

Sliderless soundboards. In this system, as constructed by Roosevelt of New York, and since introduced into this country, each pipe is provided with a separate pallet. Promptness of speech is thereby secured, running and robbing obviated, and there are no sliders to become swollen, making the stops stiff to draw at times.

Slotted pipes, those which have a slot at the top for tuning purposes. The note is sharpened by increasing the length of the slot.

Solo organ, the highest row of keys in a 4 manual organ. Powerful 8 and 4^{ft} flute stops, an Orchestral Oboe, Clarionet or Corno di Bassetto, a Cor Anglais and a Tuba with, perhaps, some string toned stops will usually be found on it. It should be enclosed in a Swell box. In a large 3 manual organ Solo and Choir are sometimes combined on the lower row of keys, and with ever increasing mechanical facilities for effecting instantaneous changes there appears to be less necessity for a fourth key board, uncomfortable to reach, and which places the music desk at a somewhat inconvenient distance from the player.

Specification. The contents of an organ drawn up by builders or organist. A complete specification prepared

and signed by the builder as a contract should plainly state: —

1. Compass of manuals and pedals.
2. The number of pipes to each stop.
3. Material of each stop, wood or metal, and the exact proportion of tin to lead in the latter stops.
4. Action, whether tracker, tubular or electric as agreed upon.
5. Thickness of Swell box (which should contain bass of Double, if any).
6. Number of Composition pedals.
7. Bellows capacity; separate reservoirs or none.
8. Particulars of case work, console and fittings, arrangement and decoration of the front pipes, with sketch of same.

There are many more matters of great importance which cannot here be mentioned in detail. Such matters should be referred to experienced organists and not hastily decided by clerics or influential amateurs possessing but a superficial acquaintance with the subject. A two manual organ (with the number of pipes stated), containing 10 stops on each manual and 3 on the pedals — a type very commonly met with, — may cost from £ 800 or £ 900 down to £ 500 or less according to whether it is constructed of choice and substantial materials by a builder of high class and artistic work, or by one whose only merit and chance of obtaining the order lies in the bait of apparent cheapness. In the former case, the pipes, soundboards, and other portions of the organ will probably survive many rebuildings and modernisings as time goes on, like those of such builders as Smith, Harris and Silbermann, — testifying to the sound and conscientious work bestowed upon them; the latter, after proving a fruitful source of annoyance, will probably be swept away within ten years; being disposed of for a small sum to make room for an entirely new instrument.

Sperrventil. In old German organs this is often a draw stop which cuts off the wind from reeds or mixtures, or both. Silbermann's organ in the Frauen Kirche, Dresden, is thus provided with one for each of its three manuals, composition pedals being unknown when it was built in 1736.

Spitzflöte, an open metal stop of 8 or 4^{ft} pitch with conical pipes, resembling the Gemshorn.

Splayed backfalls, those which are spread out like a fan.

Squares. Metal or wooden cranks used to transmit motion in a different direction, as in the cranks used in connection with household bells. In modern organs, phosphor bronze, twisted, is frequently used. When wood is used, they should not be cut out in one piece, as one side would be liable to snap off with the pull, but two pieces of tough wood are dovetailed together in best work, and they are so set in their frames that they can be taken out simply without disturbing the whole row. The term "square" is somewhat inapt, as they present a triangular appearance.

Stahlspiel. Carillons in which steel bars are substituted for bells, as in the Dom organ at Merseburg. (See Carillons.)

Stentorphon, a powerful reed stop, 8^{ft} pitch.

Sticker, thin wooden rods which transmit motion by pushing (see Fig. 9, Part II).

Stopped pipes, those closed at the top with a plug or stopper. When a hole or tube passes through the stopper they are classed as "half stopped" pipes.

Suabe flute, 4^{ft} wood and metal pipes, frequently placed on the Choir organ. The mouth is inverted as in the Clarabella and Waldflute, to which family it belongs.

Sub Bass, same as Bourdon, a Pedal 16^{ft}; stopped pipes.

Sub Bourdon, a stop of 32^{ft} tone; stopped pipes.

Sub octave Coupler, one which couples the octave below to the keyboard, acting either on its own or an adjoining manual. A Choir sub octave to Great is sometimes added to an organ lacking a Great "Double".

Super octave coupler, one which takes down the keys, or otherwise couples the octave above to any given key, either on its own manual or the one above it, as the Swell to the Great. Next to the unison couplers it is the one most frequently inserted in small organs in one of these two forms, and with the gradual extension of the manual compass to C, is likely to become still more frequently employed. Pneumatic, and still more, electric action offers facilities for the multiplication of couplers without the complications that are caused by them in tracker work.

Tapped wire, a wire made like a screw to receive the leather buttons which serve to regulate the trackers.

Tell tale, the leaden weight attached by a cord to the bellows, which, moving between two marks near the blower, "Full" and "Empty" or up and down a little glass frame, shows the condition of the reservoir. Frequently one is provided for the player's information also.

Tenor C, 2nd space bass clef. At this note "half stops" invariably end in modern organs. The Voix Celeste, Clarionet and Dulciana are "Tenor C" stops in the majority of organs; the first named legitimately so, the other two merely to save expense. The Dulciana then derives its bass from a L. Gedacht or St. Diapason.

Tertian, a two rank mutation stop in foreign organs composed of Tierce and Larigot.

Tierce, see Compound stops, Part II.

Tiercina, 8^{ft} stopped pipes of tin, small scale, voiced to give the upper partial implied by its name.

Tibia Clausa, 8^{ft} stopped pipes of wood, of unusual scale in organs built on Mr. Hope-Jones' system.

Tibia Dura, wood 8 and 4^{ft} pitch. A stop of telling and penetrating character, used by Mr. Hope-Jones to bind together the other stops in certain buildings whilst in many situations its inventor states it to be quite inadmissible. A small Tibia Dura occurs in the organ in St. Paul's Church, Burton-on-Trent.

Tibia Plena, 8^{ft} open wood pipes yielding a remarkably powerful yet liquid foundation tone, nearly free from upper partials. It is of large scale, on a heavy wind. First inserted in the organ in St. John's Church, Birkenhead, by its inventor, Mr. R. Hope-Jones.

Tibia Profunda, 16^{ft} pedal stop, wood and iron, yielding a larger volume of tone than the ordinary Pedal Open Diapason.

Tirasse (Fr.) Coupler.

Tongue, (a) the vibrating slip of brass in a reed stop. A vibrating tongue thicker at the end produces a deeper tone, and one thin at the end a higher tone, than one of equal thickness throughout. The tongues are sometimes weighted at the point. About $\frac{1}{16}$ of an inch is the limit for the thickness of the tongue, beyond which, even on a heavy wind pressure, vibration is rendered uncertain or impossible. (b) Piece of metal at top of pipe to tune by.

Touch, the resistance offered to the finger by the key, and the depth to which it descends. In large modern pneumatic and electric organs the touch can be made as light as that of a piano, even when the full power is used and all the couplers drawn; in tracker work the addition of couplers makes a considerable difference, and large organs without divided pallets become almost unplayable in quick passages at full power. Mind and fingers are extremely sensitive as to touch, and when an organ is at a considerable distance from the keyboards, the appreciable fraction of a second taken by the sound to reach the player (although in reality, the touch may be quite instantaneous) proves singularly embarrassing and tiring to players accustomed to a more "direct" action. In depth, the touch should be the same as that of a piano, viz $\frac{3}{8}$ in. estimated from the upper surface at the edge of a white key. In tracker work it is apt to get shallow in hot weather, and also after much use. The rattling and clicking noises so annoying to the player are due to the mechanism having too great "play" and requiring adjustment, and in the case of many old organs or inferior modern work, to the absence of "bushing", i. e. the application of felt or cloth at the centres of friction; or the leather on the surface of the pallets may have become too hard.

Backfall actions should be provided with a screw or a wedge at each end of the frame, so that when the touch alters entirely one way, it may quickly be adjusted without the laborious process of screwing or unscrewing each button separately. The pedals descend barely an inch.

Trackers (Fr. Abrégés; Ger. Abstrackten) are light and thin slips of wood which have a pulling movement.

Transposition switch. Transposition into any key can easily be arranged for in electric actions; in tracker work it has occasionally been done by an arrangement of backfalls or false keys under the keys, adjusted so as to let the mechanism shift laterally. The device is of little practical use, as every well trained organist should be able to transpose at sight ordinary church music.

Trichter (Ger.) Name applied by German builders to the upper part of the pipes of reed stops.

T Reversing pedal. One which, shaped like the letter T, is often applied to the Great Pedal Coupler.

Pressed down at one end it brings the coupler on, and at the other end, draws it back. It is placed either between the Swell and Great Composition pedals, or (when the space in front of the player is occupied by composition pedals acting on the Pedal organ as well), at one side of the player.

Tuba Mirabilis, 8^{ft} reed on a heavy wind pressure; the most powerful stop on the Solo organ, generally requiring the full Great to accompany it.

Tuba Sonora, an 8^{ft} powerful and smooth Solo reed stop in the Hope-Jones organs. It is provided with thicker tongues which are started by a percussive blow from the electric action.

Tuning. The first stop tuned is the Principal, 4^{ft}, of the Great Organ. On this the tuner lays his "bearings" beginning usually with middle C, tempering the intervals to suit the equal temperament system.

Large metal open flue pipes are tuned either by a tongue of metal cut from the top, which by closing flattens, and by pulling further apart sharpens; (the speaking length of the pipe being increased or decreased in this manner); or by a sliding cap.

Large wooden open pipes are provided with a piece of board nailed partly over the top of the pipe to flatten it, or, preferably by a piece of wood screwed tightly to the side, and partially covering a slit from the top of the pipe.

Open metal pipes from about 4^{ft} C upwards require the use of cones. The hollow part, pressed over the top, by bringing the edges closer together slightly lengthens the pipe and consequently flattens the note; the pointed end, by forcing the edges outward, raises the pitch.

Small open wood stops, such as Clarabellas and Wald-flutes have a metal shade let into the upper part of the pipe at the back, for tuning.

Stopped pipes are provided with stoppers of wood covered with leather; in modern work, cork is often used for the treble portion. Metal stopped pipes sometimes have caps placed over them which may be pressed down to sharpen. When the pipes have long ears they are bent outward to raise the pitch, and towards the mouth to flatten.

Reed pipes are tuned by a tuning knife, which is

simply a flat strip of iron from 1 to 2^{ft} in length. By tapping the tuning wire downward with the knife, the pitch is sharpened by the diminution of the vibrating length of the tongue. Tapping underneath the bent edge of the tuning wire in an upward direction flattens the note. Reeds are particularly liable to "go off their speech" or become silent, or come on very slowly, by a minute speck of dust getting lodged beneath the tongue and hindering its vibration. When this is the case, the tuning wire should first be knocked up, when the dust will probably fall, after which the reed is tuned. On no account should the tuning wire be driven over the obstruction. If it becomes necessary to remove the pipe, a thin sheet of note paper may be carefully passed under the tongue to clean it, but the curvature given it by the voicer must not be disturbed, or the speech of the pipe will suffer. All metal pipes are particularly susceptible to the heat of the hand, and should, after being taken out, be replaced to cool before being tuned finally. A light inside the swell box, or the breath and heat of the body will in a very few minutes cause the metal pipes to sharpen considerably. The reeds (except in some old organs in which the tuning wires slide up and down too easily through much use), are really more stable than the flue work as regards alterations of *pitch*; the vibrating tongues being enclosed, present such a comparatively small surface to become affected by atmospheric variations. But as a matter of convenience, when all the rest of the organ has become sharper with heat or flatter with cold, the reeds are adjusted to suit the more numerous flue stops

Tuyaux (Fr.) organ pipes.

Unda Maris, an 8^{ft} stop, open pipes giving a soft undulating effect, by a rank of pipes tuned a little sharper. (See Voix Celeste.)

Untersatz (Ger.), 32^{ft} tone, same as Sub Bourdon.

Unequal Temperament, a system of tuning in vogue until about half a century ago. Certain keys, up to about 3 sharps or flats, were tuned "perfect", being purer and more brilliant in effect, made so at the expense of the others into which it was impossible to modulate with good effect. Bach in Germany and Dr. Crotch in England were amongst the earliest advocates of the equal temperament system. This reform was brought about in

German organs long before organs in England were altered so as to render all keys equally available. Even so late as the time of Spohr, the organ in Westminster Abbey had not been altered in this respect. The organ in Wells Cathedral (built by Mr. H. Willis in 1857), was unequally tempered, and remained so until 1893 when it was entirely rebuilt and altered, being the only instance known to the author of so late a survival of the old system.

Valve, a flap composed of leather and wood, which admits wind to pass through, and cuts it off.

Ventils (see Part II, p. 43).

Vibrato. A species of Tremulant devised for the Casson organs, and made to vary the rapidity of its beat with the opening and closing of the Swell.

Viol d'Orchestre, 8^{ft} open pipes, of slender scale, with ears and a beard. In the Worcester Cathedral organ it is of pure tin, the lowest CC being only $1\frac{1}{8}$ inch in diameter, and the bottom octave owing to this exceedingly narrow scale is encased in wood to support the pipes.

Viola, 16 and 8^{ft} string toned stops of the Gamba class.

Viola di Gamba, 8^{ft} open metal stop of string tone.

Viol d'Amour, 8^{ft} open metal stop of thin and delicate tone.

Viole d'Orchestre, and *Viole Sourdine* are 8^{ft} open metal stops voiced by Mr. Thynne, and introduced into several organs built on the Casson system.

Violoncello, an 8^{ft} open metal or wood stop on the pedal.

Violone, a 16^{ft} open wood or metal stop of narrow scale on the pedals, speaking its harmonics. When skilfully voiced it gives a surprisingly close imitation of the "bite" of the bow on the strings of a Double Bass.

Voicing. Pipes as received from the maker have their mouths lower than is necessary, and they are also a little in excess of the standard length. These the "voicer" proceeds to cut up to the height required by the particular stop, using a pair of proportional compasses or dividers. The notches or nicks at the edge of the languid and on the lower lip opposite, play an important part in the speech of a pipe.

They are fine or coarse according to the nature of

the stop; bold and full toned stops such as the open Diapason will receive coarser incisions than stops of thin and delicate tone like the Dulciana. The wind hole at the foot of the pipe will have been regulated by cutting up before the mouths are similarly treated. The tops will be cut to the required pitch only after these operations have been done. The artistic voicing of reeds is a difficult and delicate process. In voicing any class of stop there is considerable scope for *individuality*, stops nominally the same differ in character as treated by the voicers employed by various builders. So that one firm may become famous for its reeds, another for its string toned stops, another for its Diapasons, another for its Gedackts, etc.

Voix Celeste, 8^{ft} open metal pipes of the Gamba or Salicional kind, tuned slightly sharp so as to give a waving or undulating beat with a Gamba or Salicional. Its proper place is in the Swell box.

Voluntary, a piece of music, extempore or otherwise, played by the organist at the beginning or end of divine service. Formerly a "middle" voluntary was also played in many churches whilst the clergyman changed his gown. The term "voluntary" is said to have been first used by a London preacher in 1690.

Vox Angelica, an 8^{ft} stop of very delicate intonation. The German V. A. is a free reed stop of small scale, more resembling the Vox Humana.

Vox Humana, an 8^{ft} reed with short tubes. It requires to be placed in a Swell box, and the tremulant is used with it. Ineffective in buildings which do not possess much resonance.

Waldflute, 8 and 4^{ft} open wood pipes, with inverted mouths. In Messrs Walker's organs an 8^{ft} Waldflute is generally placed on the Great instead of the usual Clarabella or Stopped Diapason; the 4^{ft} variety is sometimes chosen as the Choir flute, or placed on the "Great" in place of the more general Harmonic Flute.

Weitpfeife, same as Sifflöt.

Wind guage, see Anemometer.

Wind pressure, the force with which the wind enters the pipes, measured in inches by the Anemometer. For organs in a good position in very small churches and chamber organs generally — (not to be confounded with

organs *in a chamber*, requiring a high pressure) from 2 to $2\frac{1}{2}$ inches pressure is considered sufficient; 3 to $3\frac{1}{2}$ inches is commonly used in churches. Reeds are improved by a high pressure. Separate wind chests are needed when the reeds of a manual are given a higher pressure than the rest of the flue work. In the famous organ in Leeds Parish Church (in which Snetzler, Schulze, Hill, Greenwood and Abbott are represented) the Great Tuba is on 7 in., the rest of the Gt. and Pedal on $3\frac{3}{4}$; the Swell on 3 in., the Choir on $2\frac{1}{2}$, and the Echo on $1\frac{1}{2}$ in. In his organs at the Albert Hall and Alexandra Palace, Mr. Willis used a pressure of about 22 in. for the Tubas.

Wind way, the narrow opening at the mouth of a pipe between the lower lip and the block or languid.

Zart flöte, a soft 8^{ft} metal flute of narrow scale, first inserted by T. Turley in the organ at St. Mary's, Wismar.

Zauberflöte, a *stopped* 4^{ft} Harmonic Flute, its root being the 12th below its speaking note. First introduced into the Tewkesbury Abbey organ by Mr. Thynne.

PART VI.

Biographical.

Adams, Thomas, b. Sept. 5, 1785, d. Sept. 15, 1858. Was organist successively of Carlisle Chapel, Lambeth (1802—1814), St. Paul's, Deptford, until 1824, St. George's, Camberwell, and St. Dunstan-in-the-West, Fleet St. (1833). These last two offices he held conjointly until his death. Adams was noted for his extemporisations, and his services were in constant request for recitals by the organ builders at their factories. He published many organ pieces, — fugues, voluntaries, interludes, and variations.

Albrechtsberger, Johann Georg, b. Feb. 3, 1736, Klosterneuburg near Vienna, d. Vienna, March 7, 1809. Beginning as a chorister, he eventually became court organist and director of music at St. Stephen's, Vienna.

Celebrated as a teacher and contrapuntist. Beethoven and Hummel were his pupils. His organ trios have recently been re-published for the use of students.

André, Julius, b. June 4, 1808, Offenbach, d. April 17, 1880, Frankfurt. Composed many organ pieces, and wrote a "Practical Organ School" of considerable merit.

Archer, Frederick, b. June 16, 1838, Oxford. Chorister at All Saints', Margaret St., studied in London and Leipsic. Appointed organist of Merton College, Oxford and to Alexandra Palace (1873). Conducted the Glasgow Select Choir (1878—80); in 1881 accepted the appointment of organist at Rev. H. W. Beecher's Church, Brooklyn, U. S. A., moved from thence to Chicago (1896), at present Corporation organist at Pittsburg. Has published several organ pieces and a good organ method.

Arnold, Samuel, Mus. Doc., b. Aug. 10, 1740, London, d. there Oct. 22, 1802. Organist and Composer to the Chapel Royal (1783), organist of Westminster Abbey (1793). Editor of an edition of Handel's works and of four useful volumes of Cathedral music.

Attwood, Thomas, b. Nov. 23, 1765, London, d. Chelsea, March 28, 1838. Chorister of the Chapel Royal. Sent to Italy to study by the Prince of Wales (afterwards George IV). Subsequently became a pupil of Mozart. Organist of St. Paul's Cathedral 1795; in 1796 composer to the Chapel Royal and in 1836 organist there also. Composed much, and enjoyed the friendship of Mendelssohn, who dedicated his 3 Preludes and Fugues for the organ to him. Buried under the organ in St. Paul's.

Bach, Johann Sebastian, b. March 21, 1685, Eisenach, d. July 28, 1750, Leipsic. One of the greatest of all musicians, and specially important to organists; descendant of a family of celebrated musicians who occupied the chief posts in Thuringia as organists and cantors for about a century before his birth. His brother, Johann Christoph (b. June 16, 1671), became his teacher, and in 1703 he was violinist in the private band of Prince Johann Ernst of Saxony, at Weimar, his first organ post being that at the new church at Arnstadt, from whence in 1707 he removed to St. Blasius, Muhlhausen, and in the following year left to become court organist to the Duke of Weimar. In 1717 he went to Cöthen as Capellmeister and "Chamber Music Director" to Prince Leopold of Anhalt, where, his

duties not including organ playing, he wrote a great portion of his chamber music. In 1723 he became Cantor of St. Thomas's School, Leipsic, where he remained until his death, becoming, like his great contemporary, Handel, blind in his last few years. Bach was the greatest executant and master of fugal extemporisation of his age; his creative activity was enormous; in fact, the mere copying of his complete compositions seems almost a life-work. Organists are not only indebted to him for a large number of Preludes and Fugues, Toccatas, etc., of the highest importance, but also for revolutionizing the style of fingering then prevalent, and for being a strenuous advocate of the "equal temperament" system of tuning. B.'s music is essentially bracing, clear and logical in style, every note has its special purpose; all that is merely sensuous or "sentimental" in music being antagonistic to his manly upright nature; and no musician can afford to neglect a serious study of his works. The best biography on the great master is that of Spitta (2 vols., 1873—80).

Bach, Wilhelm Friedemann, b. Nov. 22, 1710, Weimar, d. July 1, 1784, Berlin, eldest son of J. S. B., was organist of St. Sophia, Dresden, 1733—47, and of St. Mary's, Halle, until 1764. He was extremely gifted, but led an irregular life, and died in poverty. Many of his MSS. are preserved in the Berlin Library; he is credited with having lost many of his father's.

Bach, Carl Philipp Emanuel, b. March 8, 1714, Weimar, d. Dec. 14, 1788, Hamburg, was intended for the law, but became attached to the private band of Frederick the Great, in 1740. He was also gifted, and aided in the development of the symphony and sonata, preparing the way for Haydn and Mozart. In 1767 he succeeded Telemann as church musical director at Hamburg.

Bach, Johann Christoph Friedrich, b. June 21, 1732, Leipsic, d. Jan. 26, 1795, Bückeburg, where from 1756 he was Capellmeister to Count Schaumburg, having, like his brother Carl, first studied law.

Bach, Johann Christian, b. 1735, Leipsic, d. Jan. 1, 1782, London, youngest son of J. S. B., went to Milan as organist in 1754; in 1759 settled in London as court composer; wrote chiefly light operas.

Bach, Wilhelm Friedrich Ernst, b. May 27, 1759,

Bückeurg, d. Dec. 25, 1845, Berlin, son of the "Bückeurg" Bach, and last male descendant of J. S. B., was also a pianist and organist of repute in London, residing afterwards in Paris, Minden and Berlin.

Bach, August Wilhelm, b. Oct. 4, 1796, Berlin, d. April 15, 1869, Berlin; organist of several Berlin churches, no relative of the foregoing; succeeded Zelter as director of the Royal Institute for Church Music, Berlin.

Bache, Francis Edward, b. Birmingham, Sept. 14, 1833, d. there, Aug. 24, 1858. Studied with Sterndale Bennett in London, Hauptmann and Plaidy in Leipsic, and the organ with Schneider in Dresden. A musician of great powers, whose career was prematurely cut short at the early age of 25. His Postlude in D is familiar to most organists. His published compositions reach Op. 25; two operas and a piano concerto remain in MS. The well-known pianist and exponent of Liszt, Walter Bache, was his brother.

Barnby, Sir Joseph, b. York, Aug. 12, 1838, d. Jan. 28, 1896, London. Chorister in York Minster, studied at the R. A. M., organist successively at St. James the Less, Westminster, St. Andrew's, Wells St., and St. Anne's, Soho. Composed many anthems, hymn tunes and chants which are much used; edited the "Hymnary". Was musical director at Eton, Conductor of the Royal Albert Hall Choral Society, and on leaving Eton became Principal of the Guildhall School of Music until his death. Received knighthood in 1892.

Batiste, Antoine Edouard, b. March 20, Paris, d. there, Nov. 9, 1876. A page in Charles X.'s Chapel; Premier Prix at the Conservatoire. Organist of St. Nicolas des Champs 1842—54, and of St. Eustache until his death. Was highly esteemed in Paris as a teacher. Composer of much melodious and light organ music, which has enjoyed great popularity, but which is regarded as representing but imperfectly his real powers as a musician.

Baumgarten, Carl Friedrich, b. 1754, d. 1824, London, organist of Savoy Chapel, which had one of the earliest pedal boards in this country. B. is credited with introducing the three staves for organ music.

Beethoven, Ludwig van, b. Bonn, Dec. 16, 1770, d. Vienna, March 26, 1827. The great master studied the organ as a boy with the court organist at Bonn, Van den

Eeden, and on his death, with his successor, Neefe, for whom he frequently deputed before his 12th year, playing according to Neefe's description "with force and finish, and reading well at sight". It is to be regretted that Beethoven has left us no great organ work; it is said the organs with which he was associated in early youth were of inferior quality. Two Preludes "through all the major keys" (Op. 39), a Prelude in F minor, and 2-part Fugue, — probably early works, — were apparently intended for the organ.

Benoist, François, b. Sept. 10, 1794, Nantes, d. April, 1878. Obtained the Prix de Rome, Paris, and on his return became organ professor at the Conservatoire and to the Court.

Bergner, Wilhelm, b. Nov. 4, 1837, Riga. Organist of the English Church there in 1861, afterwards of the Cathedral. Established a Bach Society, and by his influence the great organ by Walcker was erected in the Cathedral.

Best, William Thomas, b. Aug. 13, 1826, Carlisle, where he received his first instruction from Young, organist of the Cathedral, d. May 10, 1897, Broad Green, near Liverpool. Appointed organist of Pembroke Chapel, Liverpool, 1840; Church for the Blind 1847; Liverpool Philharmonic, 1848. Leaving Liverpool for London, in 1852 he was appointed organist of the Panopticon of Science and Art, Leicester Square, and of St. Martin's in the Fields, and in 1854, of Lincoln's Inn Chapel. Returned to Liverpool in 1855, on being appointed organist to St. George's Hall. Appointed organist, Wallasey, Birkenhead, 1860; Holy Trinity, Liverpool, 1863; Musical Society of Liverpool, 1868; and re-appointed, Philharmonic, 1872. Mr. Best resigned the St. George's Hall appointment in 1895, and received a pension of £100 from the Civil List. As an executant, Mr. Best has had few equals; his organ pieces and arrangements are very numerous, and he was the author of two excellent methods: "The Modern School for the Organ" (1853), and "The Art of Organ Playing" (1870). The former consists of exercises from his own pen; Part II of the latter illustrates special difficulties in organ technique, through short extracts from standard organ works.

Bexfield, William Richard, Mus. Doc., b. April 27, 1824, Norwich, d. Oct. 29, 1853. Chorister at Norwich Cathedral

under Dr. Buck. On leaving the choir studied almost unaided, obtained an organ appointment at Boston, Lincolnshire; in 1846 graduated as Mus Bac., Oxford. In 1848, coming to London, was appointed organist of St. Helen's, Bishopsgate St. Received his Mus. Doc. at Cambridge in 1849. Some organ fugues, and several anthems of his have been published, and an oratorio "Israel Restored" was produced in 1852 at the Norwich Musical Festival.

Bishop, John, b. Cheltenham, July 31, 1817. Appointed organist St. Paul's, Cheltenham, at the age of 14; in 1838 at Blackburn; returned to Cheltenham in 1839, where he has held the office of organist at St. James's Church, the Roman Catholic Chapel, and St. John's, resigning the latter in 1852. He is the editor and translator of numerous theoretical works. Another John Bishop was organist of Winchester Cathedral in 1729.

Blewitt, Jonas. An organist of repute who held, about 1795, the appointments of St. Margaret Pattens and St. Gabriel, Fenchurch, also St. Catherine Coleman, Fenchurch St. Author of a "Treatise on the Organ with explanatory voluntaries", a set of "Ten Voluntaries" and "Twelve easy and familiar Movements". Died 1805. His son,

Blewitt, Jonathan, b. 1782, London, d. 1853, was an organist and a vocalist, and composer of ballads. He was a teacher of much repute in Dublin.

Bossi, Enrico, contemporary Italian organist and composer, some of whose pieces have appeared in "Cecilia"; organist of the Cathedral, Como.

Boyce, William, Mus. Doc., b. 1710, Upper Thames St., London, d. Feb. 7, 1779, Kensington. Chorister of St. Paul's Cathedral, subsequently articulated pupil to the organist, Maurice Greene. Studied under Dr. Pepusch, became organist of Oxford Chapel, Vere St., Cavendish Sq., St. Michael's Cornhill (1736), succeeded Weldon as composer to the Chapel Royal, same year, and organist of same in 1758. In 1749 he was organist of All Hallows, Thames St. The organ on which he played was removed from thence in 1894 to St. Michael's, Paternoster Row. In 1749 he received his Doctor's degree at Cambridge. Being afflicted with deafness at an early period in his career, Dr. Boyce gradually relinquished organ playing and teaching for editing; his great work in this direction

being the 3 vols. of Cathedral Music. By this and his fine anthems "O where shall wisdom be found?", "By the waters", etc., he will best be remembered. He lies buried in the vault under the centre of the dome of St. Paul's Cathedral.

Bridge, John Frederick, Mus. Doc., b. Dec. 5, 1844, Oldbury, chorister at Rochester. Studied under J. Hopkins and Sir John Goss. From 1865—69 organist of Holy Trinity, Windsor; then of Manchester Cathedral. Received his Doctor's degree in 1874. In 1875 appointed deputy organist, Westminster Abbey, succeeding Turle in 1882. Professor of Harmony and Counterpoint at the R. C. M. and Gresham Lecturer, knighted 1897. Composer of many Cantatas, anthems, etc., and author of primers on "Organ accompaniment", etc. His brother,

Bridge, Joseph Cox, Mus. Doc., b. Aug. 16, 1853, Rochester, became assistant organist Rochester Cathedral, subsequently Manchester Cathedral; appointed organist Chester Cathedral in 1877, where he helped to resuscitate the Triennial Festival.

Brosig, Moritz, b. Oct. 15, 1815, Fuchswinkel, Upper Silesia, d. Jan. 24, 1887, Breslau. Studied in Leipsic, succeeded Franz Wolf there in various posts. Became lecturer at the University, and was also a member of the "Cecilia" Academy, Rome. Composer of ability; chiefly Church music, including 20 books of organ pieces and an Organ Book in 8 parts.

Brownsmith, John Leman, b. 1809, Westminster, d. Sept. 14, 1866. Chorister at the Abbey. In 1829 organist of St. John's, Waterloo Rd.; 1838, Lay Vicar at the Abbey; 1848, organist to the Sacred Harmonic Society, and in 1853 at St. Gabriel's, Pimlico. From 1857—65 he was organist at the Handel Festivals, Crystal Palace.

Bruckner, Anton, b. Sept. 4, 1824, Ausfelden, Austria, where he was first chorister, then organist, at St. Florian. In 1855, after competition, he was appointed organist of Linz Cathedral. Succeeded Sechter at the Hofkapelle, Vienna, 1867. Success at an organ competition at Nancy in 1869, led to invitations to give recitals in Paris and elsewhere. In 1871 he gave 6 recitals on the Albert Hall organ, London. His symphonies are highly esteemed in Germany, one of them having earned Wagner's approval. His 7th symphony was given in

London in 1887 at a Richter Concert. He died Oct. 11, 1896, Vienna.

Buck, Dudley, b. March 10, 1839, Hartford, Conn., U. S. A. Studied in Leipsic and Dresden, subsequently spending a year in Paris. Organist of Park Church, Hartford, in 1862, St. James's, Chicago, 1868, where his house and library and MSS. were destroyed in the great fire of 1871. Removed to Boston, and was appointed organist at St. Paul's Church and to the Music Hall, afterwards at Shawmut Congregational Church. Went to New York in 1874, and became assistant conductor to Theodore Thomas; music director at St. Ann's Church, Brooklyn, until 1877, then at Holy Trinity. Dr. Buck has published several organ pieces, anthems, choral and orchestral works, which have found a wide acceptance.

Buck, Zachariah, Mus. Doc., b. Norwich, Sept. 9, 1798, d. Newport, Essex, Aug. 5, 1879, became chorister at the Cathedral under Beckwith, succeeding him in 1828 as organist. His chief claim to notice is as a teacher and trainer of choir boys, in which capacities he was highly successful.

Bunnett, Edward, Mus. Doc., b. June 26, 1834, Ship, Norfolk, assistant organist at Norwich Cathedral to Dr. Buck, on whose resignation in 1877 his claims as successor were passed over by the authorities amid general disapproval. Appointed organist St. Peter Mancroft, to the Corporation and Festivals, Norwich. Composer of much Church music, the Evening Service in F being known almost everywhere.

Buxtehude, Dietrich, b. 1637, Helsingör, Denmark, d. May 9, 1707. Son of the organist of the Olai Church there. Appointed organist of the Marien Kirche, Lübeck in 1668, where he started evening musical performances which became celebrated throughout Germany. He was renowned as a player, and as a composer contributed very materially to the art of writing for the organ which afterwards found in Bach its highest exponent. Spitta, in his *Life of Bach*, gives a complete list of Buxtehude's published works, some of which have been republished in recent times.

Byrd, William, b. circa 1538, London, d. July 4, 1623. Chorister of old St. Paul's, and pupil of Tallis, subsequently organist at Lincoln. One of the earliest

English organ composers whose works still exist. The Virginal Book of Queen Elizabeth contains 70 organ and clavier pieces by him. In 1575, conjointly with Tallis, he held a 21-years' patent (monopoly) for printing and selling music paper.

Calkin, John Baptist, b. March 16, 1827, London. Composer of numerous organ pieces.

Camidge, John, b. about 1735, York, d. there, April 25, 1803; his son Matthew, b. 1758, d. Oct. 23, 1844, and John Camidge, Mus. Doc., (son of Matthew), b. 1790, d. 1859, held in succession the office of organist of York Minster, from 1756—1859.

Capocci, Filippo, b. May 11, 1840, Rome. Became in 1875 organist of San Giovanni, Rome, where his father was Maestro di capella. One of the most talented of Italian organists. A collection of his pieces has been published for the use of English players.

Carter, Thomas, b. Dublin, circa 1735, d. Oct. 12, 1804, organist of St. Werburgh's, Dublin, 1751—69. Some of his organ music shows an advance upon the then prevailing style.

Chadwick, George Whitfield, b. Nov. 13, 1854, Lowell, Mass., studied at Leipsic, organist and composer of ability, residing in Boston, U. S. A.

Chauvet, Charles Alexis, b. June 7, 1837, Marnes, d. Jan. 28, 1871, Argentan. Entered the Paris Conservatoire in 1850, winning first prize in the organ class in 1860. Held office in several Paris churches; in 1869 appointed to the Ste. Trinité.

Chipp, Edmund Thomas, Mus. Doc., b. Dec. 25, 1823, London, d. 1886, Nice. Son of the well-known harpist and drummer, educated at the Chapel Royal, St. James's. Held the organ appointments, successively, at St. Olave's; St. Mary-at-Hill, Eastcheap; the Panopticon; Holy Trinity, Paddington; Ulster Hall, Belfast; Kinnaird Hall, Dundee; St. Paul's Church, Edinburgh; and from 1867 until his decease, at Ely Cathedral. Composer of some graceful organ pieces, and two cantatas; a player of excellent technique, also violinist.

Clarke, James Hamilton Siree, b. June 25, 1840, Birmingham. Organist there of St. Matthew's, at the age of 12. Held several London appointments; resided for a short period in Australia; prolific composer.

Clark, Jeremiah, Mus. Doc., b. circa 1668, d. Dec. 1, 1707, London. Chorister in the Chapel Royal, organist of Winchester College, St. Paul's Cathedral (1695), at the Chapel Royal (1700) jointly with Wm. Croft. Composed several anthems and operas.

Clark, Frederick Scotson, (*Rev.*), Mus. Bac., b. Nov. 16, 1840, London, d. there, July 5, 1883. Composer of many organ pieces in a light style.

Clarke, John, Mus. Doc., b. Dec. 13, 1770, Gloucester, d. Feb. 22, 1836, Holmer near Hereford. Organist of Ludlow Parish Church, 1789; Armagh Cathedral, St. Patrick's and Christ Church Cathedrals, Dublin, 1795, Trinity and St. John's, Cambridge, 1798, Hereford Cathedral, 1820. Assumed the name of Clarke Whitfeld on the death of his uncle. Composer of numerous services and anthems, and was the first to arrange piano accompaniment for Handel's oratorios.

Claussman, Aloys, b. July 5, 1850, Uffholtz, Alsace, studied in Niedermeyer's Music School, Paris, obtaining prizes for piano, organ and composition. Maitre de Chapelle in 1873 and organist in 1884 of the Cathedral, Clermont-Ferrand, composer of numerous organ pieces published in Paris and in Boston U. S. A.

Collin, Charles, b. 1840. Organist of St. Brieuc Cathedral. Composer of several organ pieces.

Cooke, Benjamin, b. circa 1734, London, d. Sept. 14, 1792, Westminster. Deputised at the Abbey when 12 years of age; appointed organist there in 1762, also at St. Martin's-in-the-Fields in 1782. Composed a quantity of Church music, glees and canons; celebrated also as a theorist.

Cooper, George, b. July 7, 1820, Lambeth, d. London, Oct. 2, 1876. Deputised in St. Paul's at the age of 11, earning the approval of Attwood and Mendelssohn for his extempore playing. Between 13 and 14 organist of St. Benet, Paul's Wharf, in 1836 of St. Ann and St. Agnes; in 1843 succeeded his father at St. Sepulchre, and in 1867 succeeded Sir G. Smart at the Chapel Royal. His "Introduction to the Organ" was a pioneer work. His playing was marked by great dignity of style, and he did much to familiarise English people with Bach's works. Although noted for extempore playing at such an early age, in composition he did but little.

Couperin. A family of French organists, dating from 1630. François, the best known from his clavier pieces, was born Nov. 10, 1668, d. Paris, 1733, and succeeded his uncle as organist of St. Gervais, Paris.

Coward, James, b. Jan. 25, 1824, London, d. there, Jan. 22, 1880. Chorister at the Abbey, organist of Lambeth Parish Church, St. George's, Bloomsbury, St. Magnus the Martyr, London Bridge, and at the Crystal Palace from its opening until his death. He possessed an exceptional talent for extemporisation, and was conductor of several Glee and Madrigal Societies. No less than ten of his glees obtained prizes at competitions. At one period he was organist to the Sacred Harmonic Society, and to the Grand Lodge of Freemasons.

Dayas, William Humphrey, b. Sept. 12, 1865, New York. American organist of distinction, studied with Haupt; has also held appointments as piano teacher in various continental Conservatoires.

Dienel, Otto, b. Jan. 11, 1839, Tiefenfurth in Silesia. Became organist of the Marienkirche, Berlin, and since 1881 Royal Music Director. Has published many organ pieces.

Dubois, Clément François Théodore, b. at Rosney, Marne, Aug. 24, 1837. Entered the Paris Conservatoire at the age of 17, where he gained the first prizes for harmony, fugue and organ, and in 1861 the Prix de Rome. Appointed choir-master in 1866 at St. Clotilde, then at the Madeleine, where in 1877 he succeeded Saint Saëns as organist. In 1896 was appointed Director of the Conservatoire. Composer of several orchestral works, a few operettas and cantatas. His organ pieces take rank amongst the best of the modern French school.

Dupuis, Thomas Sanders, Mus. Doc., b. in 1733, of French parents, d. June 17, 1796, London, Chorister of the Chapel Royal; succeeded Dr. Boyce there as organist. Composer of several organ pieces, concertos and sonatas.

Dussek, Johann Ludwig, b. Feb. 9, 1761, Czaslan, Bohemia, d. St. Germain-en-laye, March 20, 1812. Though known chiefly as a great pianist and fertile composer for that instrument, Dussek was also an accomplished organist. He was chorister in the Minorite Church, Iglan, then organist of the Jesuit Church, Kutttenberg; removed to

Prague, where his youth barred the way to his becoming a Cistercian friar. Became organist of St. Rombaut's, Mechlin, then at Berg-op-Zoon, which was his last organ appointment. The influence of the organ has often been noticed in the slow movements of his piano sonatas, and the beautiful *cantabile*, in his piano playing, which, as well as the broad and noble style that so impressed his contemporary critics, may also largely be traced to it.

Dykes (Rev.), John Bacchus, Mus. Doc., b. Kingston-upon-Hull, March 10, 1823, d. Jan. 22, 1876, St. Leonard's. Studied under Skelton, organist of St. John's, Hull, subsequently under Walmisley at Cambridge, where he became conductor of the University Musical Society. In 1849 he was appointed Minor Canon and Precentor of Durham Cathedral. His numerous and extremely popular hymn tunes contributed greatly to the success of "Hymns Ancient and Modern", and by these he will be chiefly remembered.

Eberlin, Johann Ernst, b. March 27, 1702, Jettingen, Bavaria, d. Salzburg, June 21, 1762. Court organist to the Archbishop; composer of many fugues in the strict style, and other Church music. Mozart prized some of these works sufficiently to copy them into an MS. collection.

Eddy, Clarence, b. Greenfield, Mass., June 23, 1851, studied under Dr. Dudley Buck at Hartford, and under Haupt and Loeschhorn in Berlin (1871), subsequently making a concert tour on the continent. Has held church appointments in Vermont and Chicago, and is one of the most successful recitalists and teachers in the States. In 1877 he was elected director of the Hershey School of Musical Art, subsequently marrying its founder, Mrs. S. Hershey. Eddy has composed numerous organ pieces, and is the translator of Haupt's "Theory of Counterpoint and Fugue".

Elvey, Sir George Job, Mus. Doc., b. March 27, 1816, Cambridge. Chorister of Canterbury Cathedral. Gained the Gresham prize medal at the age of 18, for his anthem "Bow down Thine ear". Appointed organist of St. George's Chapel, Windsor, in 1835. Composer chiefly of church music. His elder brother,

Elvey, Stephen, Mus. Doc., b. Jan. 27, 1805, Canterbury, d. Oct. 6, 1860, Oxford, was also a chorister at

Canterbury. Organist of New College, Oxford, 1830, and Choragus of the University in 1840. His "Psalter and Canticles pointed" prepared the way for modern systems of pointing. Composer chiefly of Services and chants.

Eyken, J. A. van, b. April 26, 1822, Amersfoort, d. Sept. 26, 1868, Elberfeld. Composer of organ and piano music of merit.

Eyre, Alfred James, b. Oct. 24, 1853, London. Organist of St. Peter's, Vauxhall, St. John the Evangelist, Upper Norwood, and of the Crystal Palace (1880—94), resigning the latter appointment through ill-health.

Farmer, John, b. Aug. 16, 1836, Nottingham, studied at the Leipsic Conservatorium, also at Saxe-Coburg. Became a music teacher at Zürich; from 1862 to 1885 music master at Harrow School. Appointed organist at Balliol College, 1885.

Fischer, Carl August, b. July 25, 1828, Ebersdorf near Chemnitz, d. Dec. 25, 1892, Dresden. For many years organist of the Drei Königs Kirche, Dresden. Composer of several descriptive pieces in symphony form for organ with orchestra, which have frequently been performed in Germany. Has given recitals in London and Edinburgh.

Fischer, Michael Gotthard, b. June 3, 1773, Alach near Erfurt, d. Jan. 12, 1829, Erfurt. Pupil of Kittel, and composer of many organ and other works.

Forchhammer, Theodor, b. July 29, 1847, Schiers, succeeded Ritter in 1885 as organist of Magdeburg Cathedral. Published in conjunction with B. Kothe in 1890 a "Führer durch die Orgel-Litteratur".

Forkel, Johann Nicolaus, b. Feb. 22, 1749, Meeder near Coburg, d. March 17, 1818, Göttingen. Entered University of G. as a law student, became organist of the university church. Author of several critical and historical works, and first biographer of Bach.

Franck, César Auguste Jean Guillaume Hubert, b. Dec. 10, 1822, Liège, d. Nov. 8, 1890, Paris. Studied at Liège Conservatoire, subsequently gaining piano, counterpoint and fugue, and organ prizes at the Paris Conservatoire. Appointed organist at St. Jean, St. François, and in 1860 at St. Clotilde. In 1872, succeeded Benoist as organ professor at the Conservatoire. Composer of numerous cantatas, operas, organ pieces, etc.

Franz, Robert, (von Knauth), b. June 28, 1815, Halle a. S., d. there Oct. 24, 1892. Studied under Schneider, became organist of the Ulrichskirche, resigned owing to ill-health and deafness in 1841. Famous as a song writer, and editor of valuable revisions of the works of Bach and Handel.

Frescobaldi, Girolamo, b. 1583, Ferrara, d. 1644, Rome. Organist of St. Peter's, Rome, in 1608; unrivalled in his day as an organist, and helped materially in the development of fugue. His Church music is still sometimes performed.

Froberger, Johann Jakob, d. May 7, 1667, Hericourt. Studied under Frescobaldi; was court organist at Vienna. Published some Toccate, Ricercari, Canzoni, Capricci, and Suites de Clavecin. The Berlin and Vienna Libraries contain MSS. bearing dates 1549 and 1656. Of importance historically.

Fumagalli, Polibio, b. Oct. 26, 1830, Inzago, Italy, Italian composer of organ music.

Fux, Johann Joseph, b. 1660, Hirtenfeld, Styria, d. Feb. 14, 1741; Capellmeister of St. Stephen's, Vienna, composer of Church music, and author of the "Gradus ad Parnassum", a work on counterpoint based on the old Church modes, editions of which appeared in Latin, German, Italian, French and English. Köchel in 1872 issued a thematic catalogue of his works with a biography.

Gade, Niels Wilhelm, b. Feb. 22, 1817, Copenhagen, d. there, Dec. 21, 1890; most celebrated of Danish composers, was organist at Copenhagen in 1848, and in 1861 was royal Danish court Capellmeister. Chief organ work, Three Pieces, Op. 22 (Augener Edition 8704).

Garrett, George Mursell, Mus. Doc., b. June, 1834, Winchester, d. April 8, 1897, Cambridge, pupil of Dr. S. Elvey and Dr. S. S. Wesley, and became the latter's assistant. Organist of Madras Cathedral, 1854—56, subsequently St. John's, Cambridge, and to the University (1875). Composer of Church music.

Gaul, Alfred Robert, Mus. Bac., b. 1837, Norwich, pupil of Dr. Buck. Organist of St. Augustine's, Edgbaston, Birmingham, and composer of very popular church music and cantatas.

Gauntlett, Henry John, Mus. Doc., b. 1805, Wellington, Salop, d. Feb. 21, 1876, Kensington. Educated by his

father, a clergyman at Olney, Bucks, where he acted as organist at the age of 9. Intended for the law, he attained a reputation as organist, playing at St. Olave's, Southwark, for 20 years from 1827. Was chosen by Mendelssohn for the organ part in first performance of the *Elijah*. In 1836, appointed organist at Christ Church, Newgate. Was a strong advocate for reform in organ building and the abolition of the old F and G compass. Composer of Church music, chiefly hymn tunes, many of which are indispensable to every English hymnal.

Gerber, Heinrich Nikolaus, b. Sept. 6, 1702, near Sondershausen, d. there, Aug. 6, 1775. Studied law in Leipsic, became a pupil of J. S. Bach, appointed organist in 1728 at Heringen, and in 1738 court organist at Sondershausen. Composed numerous organ pieces, which remained in MS. Also occupied himself with organ improvements. His son, Ernst Ludwig, compiled a great "Lexikon der Tonkünstler", one supplement to which contains descriptions of famous organs.

Gheyn, Matthias van den, b. April 7, 1721, Tirlemont (Brabant), d. June 22, 1785, Louvain; organist of St. Peter's Church, Louvain, and famous also as a carillonneur. He published several highly interesting pieces for the carillons and also organ music.

Gibbons (Rev.), Edward, Mus. Bac., b. about 1570, organist of Bristol Cathedral, then of Exeter Cathedral, until the destruction of the organ in 1644, MSS. of his are preserved at Oxford, and in the British Museum (Tudway Collection). His brother, Ellis, was organist of Salisbury Cathedral. A more famous younger brother of the above was:—

Gibbons, Orlando, Mus. Doc., b. 1583, Cambridge, d. June 5, 1625, became organist in 1604 of the Chapel Royal, and in 1623 at Westminster Abbey. His fine church music has gained for him the name of "the English Palestrina". His son, Christopher, b. 1615, became organist of Winchester Cathedral, leaving in 1644 to join the Royalist army. In 1660 he was organist of the Chapel Royal, private organist of Charles II., and organist of Westminster Abbey.

Gigout, Eugène, contemporary French organist and organ composer of distinction. G. has given recitals in England which have attracted some attention. He is

organist of St. Augustine, Paris, and Professor at the school of Religious music.

Gladstone, Francis Edward, Mus. Doc., b. March 2, 1845, Summertown near Oxford; pupil of Wesley. Organist successively at Weston-super-mare, Llandaff Cathedral, Chichester Cathedral, Brighton, Norwich Cathedral, Christ Church, Lancaster Gate, and having been received into the Roman Catholic Church, became director of the choir of St. Mary of the Angels, Bayswater. Has composed much church music; and several excellent organ pieces.

Goss, Sir John, Mus. Doc., b. Dec. 27, 1800, at Fareham, Hants, d. May 10, 1880, Brixton. Chorister of the Chapel Royal and pupil of Attwood on leaving the choir. Organist of St. Luke's, Chelsea, and in 1838 succeeded Attwood at St. Paul's. Was also composer to the Chapel Royal. His church music ranks amongst the very best of its kind, and in well earned recognition of his services in this direction he was knighted in 1872. As a player, Goss had to contend with the inconveniently arranged organs of his time.

Gounod, Charles François, b. June 17, 1818, Paris, d. there, Oct. 19, 1893. The composer of *Faust* was also an accomplished organist. Having won in 1839 the Grand Prix de Rome, he seized the opportunity of studying Palestrina, and on his return to Paris accepted for a time the appointment of organist and Maître de Chapelle of the "Missions étrangères", and contemplated taking holy orders. He has left a few original organ pieces, chiefly marches, but the strong leaning towards the Church is shown in many of his greater works.

Greatorex, Thomas, b. Oct. 5, 1758, near Chesterfield, Derbyshire, d. July 18, 1831. Organist of Carlisle Cathedral (1780—84), Westminster Abbey 1819. During the interim he travelled, and having made in Rome the acquaintance of the Pretender, Charles Edward Stuart, had bequeathed to him a large quantity of valuable MS. music. He was also a scientist of ability, and was in great request as a conductor at musical festivals.

Greene, Maurice, Mus. Doc., b. about 1696, London, d. there Sept. 1, 1755, chorister at St. Paul's, organist of St. Dunstan's, and in 1717 of St. Andrew's, succeeding Brind in 1718 at St. Paul's and in 1727, Croft at the Chapel Royal. Was Professor of music at Cambridge,

and master of the King's band. He was one of the founders of the Society of Musicians, and a friend of Handel's. Wrote oratorios and music for the stage, but his anthems only remain.

Grell, Eduard August, b. Nov. 6, 1800, Berlin, d. Aug. 10, 1886, Steglitz, near Berlin. Organist there of St. Nicholas in 1817, made court Cathedral organist in 1839, and received various honours. Chiefly noted for his Psalms in 8 and 11, and a grand Mass in 16 parts, showing great contrapuntal skill.

Grisin, Jules, contemporary French organist (de la Metropole Rheims) whose compositions are fairly well known to English players.

Guilmant, Alexandre, b. March 12, 1837, Boulogne, studied with his father who had been organist there for 50 years, afterwards with Carulli and Lemmens. Appointed organist of Ste. Trinité, Paris, in 1871, has given many recitals in England, Italy and Russia, besides his native country, and is one of the most important of contemporary organists and composers for the instrument. His 1st and 5th Organ Sonatas (the former work also published as a symphony for organ and orchestra), rank amongst the most remarkable and original organ works in this form.

Hamel, Marie Pierre, b. Feb. 24, 1786, Anneuil, d. 1870. An authority on organ building, and author of the best French work on the subject.

Handel, George Frederick, b. Feb. 23, 1685, Halle, where at the age of 8 he became the pupil of Zachau, the cathedral organist, the Duke of Saxe-Weissenfels having overcome the father's opposition to a musical career for his son. At 11 his skill in improvising and playing from figured bass excited admiration in Berlin. The Elector wished to send him to Italy, but the father still desired him to study law as well as music. In 1702 he was appointed organist at the Schloss and Domkirche, Halle, for a year, then went to Hamburg, entering the opera orchestra as "violino di ripieno". With Telemann he went in 1703 to compete for the vacant post of organist at Lübeck, but retired on finding it a condition that the chosen candidate should marry the daughter of the former organist. In the following year, a dispute with his friend Mattheson, resulting in a duel, nearly ended prematurely Handel's career. Handel's first opera, *Almira*,

was given in Hamburg in 1705. After visiting Italy, where his operas and sacred music met with a splendid reception, he was induced to visit London, where *Rinaldo* was performed in 1711. Recalled to Hanover after 6 months' stay, he came back in 1718, and became chapel master to the Duke of Chandos. A long series of operas preceded the oratorios which made him famous. *Alexander's Feast* and *Esther* were produced in 1736—37, the *Messiah* at Dublin in 1842, which, in twenty-eight annual performances for the Foundling Hospital, added more than £ 10,000 to the funds. The last of the long series of oratorios was *Jephtha*, composed in 1752, the disease which cost him his sight attacking him whilst at work upon it. For the organ, Handel wrote 20 Concertos, and these he was in the habit of performing from figured bass, or improvising between the parts of his oratorios. Mr. Best's editions of them should form part of every organist's library. Handel has left a lasting mark upon the art of music, and especially in England. His great contemporary, Bach, he never met. He died, after a long career of noble striving against the meanness and frivolities, social and artistic, of his time, on April 14, 1759, London.

Hanisch, Joseph, b. 1812, Ratisbon, d. there, Oct. 9, 1892; organist of Ratisbon Cathedral; writer of church music, and able extempore player.

Haupt, Karl August, b. Aug. 25, 1810, Kunern, Silesia, d. July 4, 1891, Berlin. Organist of several Berlin Churches in succession; in 1869 Director of the Royal Institute for Church Music; published little, but as a player was one of the first of German organists.

Haydn, Joseph Michael, brother of Joseph Haydn, b. Sept. 14, 1737, Rohrau, d. Aug. 10, 1806, Salzburg. Chorister of St. Stephen's, Vienna, in 1762 orchestral conductor to the Archbishop of Salzburg, afterwards Cathedral organist. Prolific composer of church music, some of which appeared under his brother's name.

Herzog, Johann Georg, b. Sept. 6, 1822, Schmölz, Bavaria. Organ Professor at the Conservatorium, Munich, retiring in 1888, composer of an organ School and many collections of pieces.

Hess, Joachim, from 1766 to 1810 organist and carillonneur of St. John's Church, Gouda, in Holland. Dutch writer on the organ.

Hesse, Adolf Friedrich, b. Aug. 30, 1809, Breslau, d. there Aug. 5, 1863, son of an organ builder. Celebrated player, visited Paris and London, giving recitals, and composer of much meritorious organ music.

Higgs, James, Mus. Bac., Oxon., organist of St. Andrew's, Holborn, and one of the principal English contemporary writers on Fugue.

Hiles, John, b. 1810, Shrewsbury, d. Feb. 4, 1882, London, held organ appointments in Shrewsbury, Portsmouth, Brighton and London. Author of various educational works and organ arrangements.

Hiles, Henry, Mus. Doc., Oxon., b. Dec. 3, 1826, Shrewsbury. Organist successively in Bury, Bishopswearmouth, St. Michael's, Wood Street; Blind Asylum, Manchester; Bowdon, and St. Paul's, Manchester. Lecturer on harmony and composition, Owen's College (1880), and at Victoria University. Editor of the "Quarterly Musical Review"; one of the promoters of the National Society of Professional Musicians (now the I. S. M.). Distinguished writer on musical subjects and author of many theoretical works containing individual thought; composer of music for the church and concert-room.

Hodges, Edward, Mus. Doc., Cantab., b. July 20, 1796, Bristol, d. Sept. 1, 1867, Clifton. Organist in Bristol, 1819; from 1838—59 organist in Toronto and New York, where his influence as a musician made itself felt to the benefit of art. Returned to England in 1863.

Hofhaimer, Paulus von, b. 1459, Salzburg, d. there, 1537. Esteemed by German writers as one of the first German composers of note, and as the most famous organist of his period.

Hollins, Alfred, b. Sept. 11, 1865, Hull, organist of the People's Palace, London; professor at the College for the Blind, Norwood. Though blind, Mr. Hollins frequently gives recitals on large organs, quickly mastering the disposition and resources of each.

Homeyer, Paul Joseph Maria, b. Oct. 26, 1853, Osterode, organist of the Gewandhaus, Leipsic, and professor of the organ and theory at the Conservatorium.

Hook, James, b. 1746, Norwich, d. 1827, Boulogne. Organist at Vauxhall Gardens for many years, and of St. John's, Horsleydown; prolific composer. He was the first organist who attempted to make Bach's organ music

known in London, but was requested by the managers of Vauxhall Gardens to desist.

Hopkins, Edward John, Mus. Doc., b. June 30, 1818. Chorister at Chapel Royal, studied under Walmisley. First organ appointment, Mitcham Church in 1833; St. Peter's Islington, 1838, St. Luke's Berwick St., 1841, and Temple Church, 1843, where he raised the musical services to a very high standard. As an accompanist Dr. Hopkins has always particularly excelled. He obtained the Gresham prize medal for his anthem "Out of the deep" in 1838, and again in 1840 for "God is gone up". Several pleasing organ pieces, in addition to anthems, services, etc., have obtained recognition, and his great work on the organ (in connection with Dr. Rimbault, who contributed the historical part) published in 1855, has long been the chief English book on the organ for purposes of reference. A 3rd Edition appeared in 1877, and it is understood that a revised edition is in preparation. His younger brother,

Hopkins, John, b. Westminster, 1822, chorister at St. Paul's, succeeded Dr. H. at Mitcham in 1838, and after holding appointments at St. Stephen's, Islington; St. Benet's, Paul's Wharf; Trinity, Islington; St. Mark's, Jersey; St. Michael's, Chester Square; and Epsom Church; was appointed organist of Rochester Cathedral in 1856.

Hopkins, John Larkin, Mus. Doc., Cantab. (cousin of the above), b. Westminster, Nov. 25, 1819, d. Ventnor, April 25, 1873, was a chorister at Westminster Abbey under Turle, became organist of Rochester Cathedral 1841, Trinity College, Cambridge, and to the University, 1856. Composer of Services and anthems.

Hoyte, William Stevenson, F.R.C.O., b. Sept. 22, 1844, Sidmouth, organist of All Saints', Margaret Street, and professor of the organ at the Royal Academy and Royal College of Music.

Jacob, Benjamin, b. 1778, London, d. there, Aug. 24, 1829. After various minor London appointments, became organist of Surrey Chapel, 1794, at the invitation of the Rev. Rowland Hill; was one of the most celebrated players of his day, and in conjunction with Wesley he did much to make Bach better known in this country.

King, Oliver A., b. 1855, London, organist, pianist and composer; pianist to Princess Louise, settled in Ottawa, Canada.

Kittel, Johann Christian, b. Feb. 18, 1732, Erfurt, d. there, May 9, 1809. He was J. S. Bach's last pupil and the instructor of Rinck. Organist at Langensalza, and later at Erfurt.

Klengel, August Alexander, b. Jan. 27, 1783, Dresden, d. there, Nov. 22, 1852, pupil of Clementi; became court organist at Dresden. His 24 Canons are the most important pieces in this art-form.

Krebs, Johann Ludwig, b. Oct. 10, 1713, near Weimar, d. Jan., 1780, Altenburg. One of Bach's best pupils, organist at Zwickau, Zeitz, and Altenburg; composer of numerous well-written organ fugues.

Lachner, Franz, b. April 2, 1803, Upper Bavaria, d. Jan. 20, 1890, Munich, organist of the Protestant Church, Vienna, friend of Schubert and composer of ability.

Lachner, Ignaz, b. Sept. 11, 1807, Upper Bavaria, d. Feb. 25, 1895, Hanover, (brother), held various posts as organist or Capellmeister in Vienna, Stuttgart, Munich, Hamburg, Stockholm, Frankfort and Hanover.

Lachner, Vincenz, b. July 19, 1811, Upper Bavaria, d. Jan. 22, 1893, Carlsruhe, succeeded his brother Ignaz in Vienna as organist, afterwards resided chiefly in Mannheim and Carlsruhe.

Lange, Samuel de, b. Feb. 22, 1840, Rotterdam, organist and teacher there at the Music School, subsequently professor at Stuttgart Conservatorium. Toured in Switzerland, Leipsic, Vienna, Paris; composer of five organ sonatas, chamber music, etc. His brother, Daniel, b. 1811, Rotterdam, has also made a reputation as an organist.

Lefébure-Wély, Louis James Alfred, b. Nov. 13, 1817, Paris, d. there, Dec. 31, 1869, son of an organist. Organist of St. Roch, La Madeleine and St. Sulpice, successively. Composer of much popular organ music, also Masses, symphonies, etc., which have not become so widely known; specially gifted as an extempore player.

Lemare, Edwin H., b. Sept. 9, 1865, Ventnor; organist of Holy Trinity, Chelsea, then of St. Margaret's, Westminster; composer of organ music.

Lloyd, Charles Harford, Mus. Doc., b. Oct. 16, 1849, Thornbury, organist of Gloucester Cathedral, 1876, Christ Church, Oxford, 1882, now organist and Precentor Eton College. Known as composer of cantatas and organ music, and as a conductor.

Lux, Friedrich, b. Nov. 24, 1820, Thuringia, d. 1897,

pupil of Schneider, Capellmeister at Mayence, composer of several interesting organ pieces.

Mac Master, Georges, organist of the Trocadero concerts, Paris, and officer of the Academy. Of his organ pieces, mention may be made of a set of six, Op. 48.

Mailly, Alphonse Jean Ernest, b. Nov. 27, 1833, Brussels, piano and organ professor, Brussels Conservatoire; celebrated organ virtuoso. His organ sonata is a remarkable Op. 1, scarcely equalled in importance by his later organ works, although several of the smaller pieces are interesting and melodious.

Marchand, Louis, b. Feb. 22, 1669, Lyons, d. Feb. 17, 1732, Paris. Organist Nevers Cathedral, Auxerre Cathedral, Church of the Jesuits, Paris, finally court organist at Versailles. Exiled from Paris, he went to Dresden, there suffering discomfiture in an extempore competition with J. S. Bach.

Martin, George Clement, Mus. Doc., b. Sept. 11, 1844, Lamborne, Berks, pupil of Dr. Stainer, and in 1888 succeeded him at St. Paul's Cathedral; knighted 1897; composer of Church music.

Mendelssohn, Jakob Ludwig Felix (Mendelssohn-Bartholdy), b. Feb. 3, 1809, Hamburg, d. Nov. 4, 1847, Leipsic. A mature artist whilst yet in his boyhood, M.'s improvisations both on the organ and piano, no less than his compositions, made a deep impression upon all his contemporaries. For the complete career of the composer of *St. Paul*, *Elijah*, and the instrumental works which have so strongly influenced the art-work of our time, reference must be made to the biographical sketches of Hiller, Lampadius, Benedict, etc., as the organ works and his organ playing here claim attention. Amongst the recorded list of compositions we find 4 organ pieces dating from his 12th year; a Fantasia and 3 other pieces (dated 1822), all in MS. The 3 Preludes and Fugues, Op. 37, written at Spire in 1837, and dedicated to Thomas Attwood, and the 6 organ sonatas, dated from Frankfort, 1844—45, achieved a world-wide reputation. Of the Preludes, the second, in G, is the general favourite; the sonatas appear to be highly interesting experiments in adapting the sonata form to the organ, which demands special treatment. An interesting account of M.'s playing in London, at St. Paul's on Sunday afternoon, Sept. 10,

1837, and at Christ Church, Newgate St. on the 12th, has been given by Dr. Gauntlett, — of the playing of Bach's A minor Fugue in the former, the vergers withdrawing the blower towards the end, on finding the people would not leave, — of "six extempore fantasias" at the latter, when Samuel Wesley (then 71) also played; and of M.'s introducing to English organists several Bach fugues then unknown to them.

Merkel, Gustav Adolf, b. Nov. 12, 1827, Oberoderwitz near Zittau, d. Oct. 30, 1885, Dresden. Studied the organ under J. Schneider, theory under J. Otto, and the piano under F. Wieck, receiving further instruction in composition from Schumann and Reissiger. Merkel's first organ post was that of the Waisenhaus-Kirche, Dresden, in 1858. In the same year he won the prize offered by the Deutscher Tonhalle in Mannheim, for an organ sonata for 4 hands and double pedal, published by Peters as Op. 30. In 1860 he succeeded C. G. Höpner at the Kreuzkirche, and in 1864 was appointed court organist. In 1861 he became principal organ professor in the Conservatorium, Dresden. Of a quiet, retiring nature, strict and conscientious as a teacher, genial among friends, M. travelled but little, being absorbed in his professional duties, and the precious heritage he has left to all organ lovers in his numerous organ pieces. Of his 183 Opus Nos., by far the larger and also the more artistically important part are the organ works. The 9 sonatas, the fantasias and fugues, the variations, Op. 45, the Adagio in E, Op. 35, and many other melodious pieces, are worthy of the best traditions of a school of organ playing, which, through him, from pupil to pupil (Schneider, Unger, Trier, J. S. Bach) can trace its descent from the greatest of all organists. Merkel wrote with great ease and fluency, the fine sonata in F minor, Op. 115, for example, being completed in 6 days. As a teacher, so strict was his sense of duty to his pupils, that the last organ lesson given by him, a fortnight before his death (to the present writer) he would not consent to abridge, although seriously ill. The last sonata, Op. 183, in C minor, was written, says his biographer Herr Janssen, "with fever-haste and without rest", the proofs being corrected on his death-bed.

Merulo, Claudio, b. April, 1533, Coreggio, d. May 4, 1604, Parma; organist at Brescia, and afterwards at St.

Mark's, Venice; of importance historically, as an early composer of organ music.

Monk, Edwin George, b. Dec. 13, 1819, Frome; organist of York Minster (1859—83), editor and composer of Church music.

Monk, William Henry, b. 1823, London, d. March 1, 1889. Organist of St. Matthias, Stoke Newington (1854), and of several London Churches previously; editor of church music, notably "Hymns Ancient and Modern", which still remains the most popular and widely used hymnal of the Anglican Church.

Mounsey, Ann Sheppard, b. April 17, 1811, London, organist at Clapton, St. Michael's, Wood St., E. C., and St. Vedast's, Foster Lane. For one of her concerts in 1844, Mendelssohn composed his "Hear my Prayer". In 1853, she married Mr. W. Bartholomew.

Mounsey, Elizabeth, b. Oct., 1819, London. Organist of St. Peter's, Cornhill, in 1834, at the age of 14; sister of the above.

Mozart, Wolfgang Amadeus, b. Jan. 27, 1756, Salzburg; d. Dec. 5, 1791, Vienna, famous as a composer, pianist, organist and violinist. As a child, M.'s organ playing excited the astonishment of the monks at Ips, and after a long tour with his father, he appeared in London before the King in 1764, when his extraordinary gifts in sight-reading and extempore playing excited general admiration. M. was one of the greatest as well as one of the most prolific composers; the 17 organ sonatas with accompaniment for strings are evidently quite early works. Two or three fine pieces written for mechanical clocks have been effectively re-arranged for the organ, and are more fairly representative of the composer of *Don Giovanni*, the "Jupiter" and G minor Symphonies. Jahn's biography is the most important monument to the great composer.

Muffat, Georg, of English parentage, d. Feb. 23, 1704, Passau; organist of Strassburg Cathedral (until 1675); early composer of note.

Müller, August Eberhard, b. Sept. 13, 1767, Northeim, d. Dec. 3, 1817, Weimar. Organist at Magdeburg and then at the Nikolai Church, Leipsic; afterwards Bach's successor at St. Thomas's.

Naylor, John, Mus. Doc., Oxon., b. June 8, 1838, Stanningley near Leeds, d. May 15, 1897, on a voyage to

Australia, organist Parish Church and All Saints', Scarborough, and from 1883 at York Minster.

Naylor, Sydney, b. July 24, 1841, London, d. March 4, 1893, pupil of Dr. Hopkins, organist of several London churches, conductor and accompanist of note.

Neukomm, Sigismund, b. July 10, 1778, Salzburg, d. April 3, 1858, Paris; pupil of both J. and M. Haydn; travelled much. Prolific composer; out of 57 organ pieces, however, almost the only one acceptable to modern audiences is that entitled "Concert on a Lake, interrupted by a Thunderstorm".

Novello, Vincent, b. Sept. 6, 1781, London, d. Aug. 9, 1861, Nice; organist in 1797—1822 of the chapel attached to the Portuguese Embassy, later at the R. C. Chapel, Moorfields; founder of the publishing house; editor and arranger of Church music.

Oakeley, Sir Herbert Stanley, Mus. Doc., b. July 22, 1830, Ealing; studied in Oxford, Dresden and Leipsic; Professor of Music, Edinburgh University (1865—91), where he gave many recitals; knighted in 1876, received the L. L. D. degree (*hon. causâ*), Edinburgh, in 1891.

Ouseley (Rev.), Sir Frederick Arthur Gore, Bart., b. Aug. 12, 1825, London, d. April 6, 1889, Hereford; Musical Professor, Oxford University, 1854; Precentor of Hereford Cathedral in 1855. Exceptionally gifted in extempore playing: composer of numerous anthems, fugues and organ sonatas, etc. He became Vicar of St. Michael's, Tenbury, and there founded and endowed a college for the education of boys in music and general knowledge. He possessed a most valuable library of rare treatises, full scores, and autographs, amounting to about 2000 volumes.

Pachelbel, Johann, b. Sept. 1, 1653, Nuremburg, d. there, March 3, 1706. Held organ appointments in Vienna, Eisenach, Erfurt, Stuttgart, Gotha and Nuremburg; one of Bach's most important predecessors in organ composition. His son, William Hieronymus, was also organist in Nuremburg and published a few pieces.

Paine, John Knowles, b. Jan. 9, 1839, Portland, Maine; American organist of repute; studied in Berlin, first occupant of the post of musical professor, Harvard University, Cambridge (Mass.), 1876; composer of numerous works.

Papperitz, Benjamin Robert, b. Dec. 4, 1826, Pirna; after taking the degree of Doctor of Philology, he became a musical student, Leipsic Conservatorium, and in 1851 professor of harmony and counterpoint there; since 1868 organist of the Nikolaikirche.

Parratt, Sir Walter, b. Feb. 10, 1841, Huddersfield, son of a well-known organist, Thomas Parratt. Played the Church service at the age of 7, and at the age of 11 was appointed organist at Armitage Bridge Church; studied a short time with George Cooper, became organist of St. Paul's, Huddersfield; to Lord Dudley at Witley Court, Worcestershire; Parish Church, Wigan; Magdalen College, Oxford; and St. George's Chapel, Windsor, since 1882; and in 1883 he was appointed professor of the organ at the Royal College of Music. He is also "Passed Grand Organist" of the Freemasons; knighted for services to art. Gifted with an extraordinary memory, at the age of 10 he played all Bach's 48 Preludes and Fugues on the piano without notes.

Peace, Albert Lister, Mus. Doc., Oxon., b. 1845, Huddersfield. Showed early talent, at the age of 9 organist at Holmfirth, in 1866 Trinity Church, Glasgow, then at the University, subsequently at the Cathedral. Appointed successor to Mr. Best in 1897, as organist at St. George's Hall, Liverpool. As an executant, Dr. P. has few rivals, especially excelling in the difficult art of making orchestral works interesting and acceptable on the organ.

Perkins, Charles William, b. 1860, Birmingham, appointed organist Birmingham Town Hall in 1888 after competition, having previously held organ appointments at Handsworth, Streatham, and S. Michael's, Paddington.

Philipps, Peter, b. circa 1560, of English parentage, an ecclesiastic in Flanders, also organist and composer of madrigals and motetts. Burney credits him with being the composer of the first regular fugue (Fitz-William Virginal Book).

Pittmann, Josiah, b. Sept. 3, 1816, London, d. April 23, 1886; Lecturer, London Institution, organist of churches at Sydenham, Tooting, Spitalfields and Lincoln's Inn, and accompanist at Her Majesty's and Covent Garden; one of the pioneers of Bach's music in England.

Piutti, Carl, b. April 30, 1846, Thuringia, student, afterwards teacher, at Leipsic Conservatorium, organist

of St. Thomas's 1880, in succession to Rust; composer of organ music.

Praetorius, Hieronymus, b. Aug. 10, 1560, Hamburg, d. there, Jan. 27, 1629. Succeeded his father as organist at Erfurt; composer of Latin Church music.

Praetorius, Michael, b. Feb. 1571, Thuringia, d. Feb. 15, 1621, Wolfenbüttel, composer of church music, also author of the most famous 17th century treatise on music, the "Syntagma musicum", written in Latin. Part I dealt with musical history, Part II with musical instruments and Part III with the theory. The real name of P. was Schultz.

Prout, Ebenezer, Mus. Doc., b. March 1, 1835, Oundle, composer, lecturer and musical critic; succeeded Dr. Gauntlett as organist at Union Chapel, Islington, — noted for its congregational singing, — (1861—72); appointed Professor of Music, Dublin University, 1894, in succession to Sir R. P. Stewart. Professor P. is the author of the finest set of textbooks on Harmony, Counterpoint, Fugue and Musical Form, in the English language. A concerto for organ and orchestra is his most important contribution to organ literature.

Purcell, Henry, b. circa 1658, Westminster, d. there, Nov. 21, 1695, one of the most famous names in English art, organist of Westminster Abbey, 1680, and in 1682 of the Chapel Royal. He wrote many operas, much fine church music, and a few of his organ pieces were republished in view of the centenary celebration of 1895. His son, Edward (b. 1689, d. 1740), became organist of St. Clement's Eastcheap.

Purcell, Daniel, b. circa 1660, d. 1717. Organist of Magdalen College, Oxford, and in 1713 of St. Andrew's Holborn; brother of Henry, also composer for the stage and for the Church.

Purkis, John, b. 1781, London, d. there, 1849, organist of repute, and one of the chief exponents of the "Apollonicon" upon which he gave frequent recitals. (See Glossary.)

Pyne, James Kendrick, b. Aug. 21, 1810, London, d. there, March 4, 1893; son of a tenor vocalist with same Christian names; organist, 1829, St. Mark's, Pentonville, and from 1839 (for 50 years) at Bath Abbey; skilful extempore player. The present organist of Manchester

Cathedral and of the Town Hall (b. Feb. 5, 1852, Bath) is a son. Two other sons emigrated to Philadelphia and Baltimore, U. S. A.

Rameau, Jean Philippe, b. Sept. 25, 1683, Dijon, d. Sept. 12, 1764, Paris. Distinguished alike as theorist, composer and organist.

Rea, William, b. March 25, 1827, London, studied in London and Leipsic; after two or three London organ appointments, removed to Newcastle-on-Tyne, where, as organist to the Corporation, he did much excellent work; in 1880 became organist of St. Hilda's, S. Shields.

Reimann, Heinrich, b. March 14, 1850, Silesia, critic, organist and composer; organ appointments in Berlin, — the Philharmonic, the Scharwenka-Klindworth Conservatorium, and the Gnadenkirche.

Reinken, Johann Adam, b. April 27, 1623, Deventer, Holland, d. Nov. 24, 1722, Hamburg; organist there of St. Katherine's Church; a celebrated player, whom Bach often journeyed to listen to.

Rembt, Johann Ernst, b. 1749, d. 1810, organist at his native town, Suhl, composer of some meritorious organ trios and fuguetas.

Rheinberger, Josef, b. March 17, 1839, Vaduz, Liechtenstein. At seven years of age he was appointed organist of his native place, a second set of pedals placed above the others being expressly constructed for him. Herr Pohly was his first teacher. From the age of 12 until he was 19, he studied at the Munich Conservatorium, where in 1859 he was appointed pianoforte professor, and about the same period, organist of the Hofkirche of St. Michael. Received in 1867 the title of Royal Professor of Music, and in 1877 the appointment of Bavarian Court Capellmeister. He is professor of counterpoint and of the higher school of organ playing in Munich Conservatorium. R.'s compositions for the piano, organ, chorus and orchestra, and strings, are exceedingly numerous, the latest Opus No. being 184 (1897). He has written no less than sixteen organ sonatas, each containing fine movements which will be more appreciated as a purer taste in organ music develops itself. To those who have made a careful study of his style a peculiar individuality reveals itself, which may be described as a happy blending, in his best movements, of the modern romantic spirit with smooth,

flowing counterpoint, and a noble and dignified organ style, the former quality lifting his music, when he is at his best, far above the mass of modern German organ compositions, which so often copy only the form and style of Bach, with little or no individuality. The fugues of the Pastoral Sonata, No. 12 in D \flat , No. 13 in E \flat , and No. 15 in D (in which a Ricercare or inversion of the fugal subject is splendidly worked out), are amongst the finest specimens of fugal writing for the organ, whilst many fine first movements and beautiful middle movements will repay the attention of every earnest student. A favourite device in the sonatas is that of bringing about the opening subject at the end of the final movement, as a Coda. A Suite for organ, violin and 'cello (Op. 149), 2 concertos for organ and orchestra, should also be mentioned, and amongst the numerous collections of miscellaneous organ pieces will be found a few real gems, — such as the "Visione" (Op. 156, No. 5), Intermezzo (Op. 167, No. 7).

Rimbault, Edward Francis, L. L. D., Oxon., b. June 13, 1816, London, of French parentage, d. there, Sept. 26, 1876. Studied with S. Wesley and became organist at the Swiss Church, Soho, in 1832; became known as a lecturer and editor, contributed the historical part to "The Organ, its History and Construction" (Hopkins and Rimbault).

Rinck, Johann Christian Heinrich, b. Feb. 18, 1770, Elgersburg, Thuringia, d. Aug. 7, 1846, Darmstadt; organist at Giessen and at Darmstadt, made frequent concert tours; prolific writer for the organ, and one of the most famous players of his period; author of a celebrated organ School.

Ritter, August Gottfried, b. Aug. 25, 1811, Erfurt, d. Aug. 26, 1885; organist at Erfurt, subsequently at Merseburg and Magdeburg Cathedrals, composer of organ music and writer on organ matters; edited first 4 years of "Urania", a German paper devoted to the organ.

Roseingrave, Daniel, b. circa 1665, d. May 1727; organist of Salisbury Cathedral, 1693—98, then of St. Patrick's, Dublin, resigning in 1719, in favour of his son Ralph.

Roseingrave, Thomas (another son), b. circa 1690, d. 1750, studied in Italy and became intimate with the Scarlattis. In 1725 he was appointed organist of St.

George's, Hanover Square, after competition with six others, one of the tests being an extempore fugue. R.'s admiration for Palestrina was such that he lined the walls of his bedroom with extracts from his works.

Russell, William, Mus. Bac., Oxon., b. 1777, London, d. there, Nov. 21, 1813, was appointed organist at the Foundling Hospital in 1801, for which he edited a collection of Psalms, Hymns and Anthems. Composed oratorios, organ voluntaries and vocal pieces.

Rust, Friedrich Wilhelm, b. July 6, 1739, Wörlitz, Dessau, d. Feb. 28, 1796, Dessau, pupil in composition and organ playing of Friedemann and Emmanuel Bach; best known through his violin sonatas. His son, Wilhelm Carl, b. April 29, 1787, Dessau, possessed, like his father, an extraordinary memory, and won Beethoven's approval for his playing of Bach. Wilhelm Rust, b. Aug. 15, 1822, Dessau; Cantor of St. Thomas's School, Leipsic (1879), and professor in Stern's Conservatorium, is a son of the latter. He has edited several vols. for the Leipsic Bach Society.

Saint-Saëns, Charles Camille, b. Oct. 9, 1835, Paris, distinguished French composer, organist and pianist; organist of St. Merry, 1855, La Madeleine, 1858, resigning in 1877 in order to devote more time to composition and to make tours through Europe. M. Saint-Saëns has visited England on several occasions, playing (organ and piano) and conducting his own compositions in London.

Salomé, Théodor César, b. Jan. 20, 1834, Paris, organist of repute, some of whose pieces have become well-known in this country.

Scarlatti, Domenico, b. 1683 or 1685, Naples, d. 1757; Maestro at St. Peter's, Rome, 1715; court cembalist, Lisbon, 1721, after a short residence in London. In 1709 he competed (as the best representative Italian master) at Rome with Handel, on both organ and harpsichord; in the former Handel won an easy victory, in the latter subject the issue was not so decided.

Scheidt, Samuel, b. 1587, Halle, d. March 14, 1654, organist and composer of importance historically; he treated the Chorale in a more artistic manner, and wrote pedal parts of greater freedom than had previously been attempted.

Schneider, Johann, b. July 17, 1702, near Coburg, d. 1775, was a pupil of J. S. Bach, court organist at Saal-

field in 1721, and organist of St. Nicholas', Leipsic, 1730; gifted in extempore playing.

Schneider, Wilhelm, b. July 21, 1783, Saxony, d. Oct. 9, 1843, Merseburg, as organist and musical director there; writer on the organ and musical theory.

Schneider, Johann Christian Friedrich, b. Jan. 3, 1786, near Zittau, d. Nov. 23, 1853, Dessau; in 1813 organist of St. Thomas's, Leipsic, famous as a conductor also, wrote many oratorios, a quantity of church music and a "Hand-book for Organists".

Schneider, Johann Gottlob, b. Oct. 28, 1789, Altgersdorf, d. April 13, 1864, Dresden (brother of the foregoing), made many tours as organ virtuoso, settling in Dresden in 1825 as organist of the Evangelical Court church; he gave concerts in London in 1833; Merkel was his most celebrated pupil.

Schumann, Robert Alexander, b. June 8, 1810, Zwickau, d. July 29, 1856, Endenich near Bonn. S.'s contributions to organ literature consist of 6 Fugues on the name of Bach, Op. 60. The studies for Pedal Piano, Op. 56 (6 pieces in Canon form), and 4 "Sketches" for the same, Op. 58, are also available.

Seidel, Johann Julius, b. July 14, 1810, Breslau, d. there, Feb. 13, 1856; organist of St. Christopher's, Breslau, and author of "The organ and its construction" (1st Ed. 1843).

Séjan, Nicolas, b. March 19, 1745, Paris, d. there, March 16, 1819; organist of St. André des Arts, of Notre Dame, and in 1789 Court organist, and after the Revolution, at the Invalides (1807) and in 1814 again resumed his previous office.

Selby, Bertram Luard, b. Feb. 12, 1853, Kent; studied in Leipsic, organist of Salisbury Cathedral, and subsequently of St. Barnabas', Pimlico; composer of several meritorious compositions.

Silas, Edouard, b. Aug. 22, 1827, Amsterdam, pianist, organist and composer of ability, settled in London in 1850, became organist of the R. C. church, Kingston-on-Thames; is a gifted extempore player.

Sinclair, George Robertson, b. 1863, Croydon, educated at St. Michael's College, Tenbury; first organist of Truro Cathedral, succeeded Dr. L. Colborne at Hereford Cathedral, 1889; conductor and organist of ability.

Skuhersky, Franz Zdenko, b. July 31, 1830, Bohemia, d. Aug. 19, 1892, Budweis, director of Prague Organ School, 1866; writer on the organ and on musical theory.

Smart, Henry, b. Oct. 26, 1813, London, died there July 6, 1879. Intended for the law, his love for music proved too strong, and in 1831 he was appointed organist of Blackburn Parish Church. In 1836 he removed to London, as organist of St. Philip's, Regent Street, in 1844 he was appointed at St. Luke's, Old St., and in 1864 at St. Pancras, where his masterly extempore voluntaries and accompaniments to the singing in unison of the congregation (a special feature in the music of this church) will long live in the memory of those privileged to hear them. As a player, Smart stood in the very first rank, whilst his numerous organ compositions, Services, and anthems, cantatas, songs and part-songs, speedily won for him a widespread recognition by reason of their melodiousness and sterling merit. Few English organ works have become so widely and deservedly known as Henry Smart's, and amongst the best modern compositions for the instrument may be mentioned the three fine Postludes in C, D, and E♭, a stately "Solemn March in E♭", the Air with variations in A, numerous charming Andantes, etc., which are indispensable to the library of every British organist. Not less remarkable was Smart's knowledge of every detail in organ construction, which enabled him in 1857 to furnish not a mere specification, but working drawings, in connection with Dr. Spark, for a grand organ for Leeds Town Hall, erected in 1858 by Gray & Davison, at a cost of £6,000. This organ embodied several interesting features new at the time, and Smart's plans for the organ in St. Andrew's Hall, Glasgow (built in 1877 by Lewis), elicited the admiration of the celebrated French builder, Cavaillé Coll. In engineering and mechanics generally, Smart was no less skilled, and when in the latter years of his life he became blind, an indomitable perseverance enabled him to triumph over this obstacle, a large number of his most important works (including the oratorio *Jacob*), having been dictated to his daughter during the last 14 years of his life. A tardy recognition of his genius in the form of a pension of £100 per annum he did not live long enough to enjoy. An interesting biography by his life-long friend, Dr. Spark, appeared in 1881, and an analysis of

his organ works by John Broadhouse has been reprinted from the *Musical Standard*.

Smart, Sir George Thomas, b. May 10, 1776, London, d. there, Febr. 23, 1867; conductor of Philharmonic Society, organist and composer of the Chapel Royal, uncle of Henry Smart.

Smith, John Christopher, b. 1712, Anspach, d. Oct. 3, 1795, Bath; Handel's amanuensis and representative at the organ and harpsichord at his oratorio concerts.

Spark, William, Mus. Doc., Dublin, b. Oct. 28, 1825, Exeter, d. June 16, 1897, Leeds, pupil of Dr. Wesley; after various appointments became organist of St. George's, Leeds, and in 1859 organist to the Corporation, after competition; editor of the *Organist's Quarterly Journal*, started by him in 1869, and writer on musical subjects.

Stainer, Sir John, Mus. Doc., Oxon., b. June 4, 1840, London, chorister St. Paul's Cathedral; organist of Magdalen College, Oxford, 1860, and to the University; appointed to St. Paul's Cathedral, 1872, resigning (owing to failing eyesight) in 1888, receiving the honour of knighthood. Composer of church music, cantatas, and various theoretical works. At present Professor of Music to the University of Oxford, also Inspector of Music in Elementary Schools to the Privy Council.

Stanford, Charles Villiers, b. Sept. 30, 1852, Dublin, organist of Trinity College, Cambridge, 1873, and conductor of the University Musical Society. Studied with Reinecke and Kiel in Leipsic and Berlin; conducted the Philharmonic and Bach Choir, London, on his return; in 1887 succeeding Macfarren as Professor of Music, Cambridge University. S.'s creative activity extends over almost every art-form.

Stanley, John, Mus. Bac., b. Jan. 17, 1713, London, d. there, May 19, 1786; blind from the age of 3, studied with Greene, obtaining his first appointment at the age of 11; elected organist of St. Andrew's, Holborn, afterwards at the Temple, finally at the Chapel Royal. S. wrote several works, and was esteemed by Handel.

Steggall, Charles, Mus. Doc., Cantab., b. June 3, 1826, London, pupil of Sterndale Bennett; organist successively of Christ Chapel, Maida Hill, Christ Church, Lancaster Gate, and of Lincoln's Inn Chapel, 1864. In 1882 he became examiner at Cambridge for the Mus. Doc. degree.

Stephens, Charles Edward, b. March 18, 1821, London, d. July 13, 1892; organist successively of St. Mark's, Myddelton Square; Trinity Church, Paddington; St. John's, Hampstead; St. Mark's, St. John's Wood; St. Clement's Danes; and St. Saviour's, Paddington; theorist and composer.

Stewart, Sir Robert Prescott, Mus. Doc., Dublin, b. Dec. 16, 1825, Dublin, d. there March 25, 1894, chorister Christ Church Cathedral there, afterwards organist, 1843; became organist of Trinity College, Dublin, in 1844, conductor of the University Choral Society, and Belfast Philharmonic, also lecturer and glee writer of ability. Represented Ireland at the great Peace Festival held in Boston, U. S. A., in 1872, and was knighted on his return.

Stirling Elizabeth, b. Feb. 26, 1819, Greenwich, d. 1895, organist of All Saints, Poplar, 1839, St. Andrew's Undershaft, 1858—80. In 1856 passed the Mus. Doc., Oxon., without receiving the title; composer of part-songs and organ pieces.

Sullivan, Sir Arthur Seymour, b. May 13, 1842, London, son of a bandmaster, chorister of the Chapel Royal. The well-known composer of light opera was at one time organist of St. Michael's, Chester Square, and in 1867 music director at St. Peter's, Onslow Gardens, and his numerous anthems and well-written organ parts show the influence of the early training in Church music of the gifted composer of the "Golden Legend" and various other works in almost every art-form.

Sweelinck, Jan Pieter, b. 1562, Amsterdam, d. there, Oct. 16, 1621; the most famous of Dutch organists; he founded a school of players and was one of the most important early writers of organ fugues and church music, preparing the way for Bach.

Tamplin, Augustus Lechmere, b. 1837, d. 1889, Fulham, player of ability.

Thiele, Carl Ludwig, b. Nov. 18, 1816, Harzegerode, d. Sept. 17, 1848, Berlin. From 1839 organist of the Parochial Church, Berlin; organ virtuoso, and composer of organ pieces of exceptional difficulty.

Thomas, G. A., b. Oct. 12, 1842, Reichenbach, Silesia, d. May 27, 1870, St. Petersburg, where he obtained an appointment in 1866. For some years organist in Leipsic. His best known work in England is a Concert

Fantasia, Op. 6, introducing the Chorale "Ein' feste Burg".

Thorne, Edward Henry, b. May 9, 1834, Cranborne, chorister of St. George's, Windsor, organist of Parish Church, Henley, Chichester Cathedral, 1862, St. Patrick's, Brighton, 1870, St. Peter's, Cranley Gardens, St. Michael's, Cornhill, and St. Anne's, Soho, where he has given several interesting Bach recitals; composer of organ pieces and church music.

Tonking, Henry Charles, b. Jan. 17, 1863, Camborne, student of the Royal Academy, organist and violinist, well-known recital player.

Töpfer, Johann Gottlob, b. Dec. 4, 1791, Thuringia, d. June 8, 1870, Weimar, organist there from 1830; the most famous German author on organ construction. His Jubilee was celebrated in characteristic German style by the publication of an Album of organ pieces, composed in his honour, and to which most of the leading musicians in Germany contributed.

Tours, Berthold, b. Dec. 17, 1838, Rotterdam, d. March 11, 1897, London, composer of organ music, anthems and Services, musical adviser to Novello, Ewer & Co., and excellent all-round musician.

Türk, Daniel Gottlob, b. Aug. 10, 1756, near Chemnitz, d. Aug. 26, 1813, Halle; celebrated teacher, organist and writer on musical subjects, organist at Halle and teacher in the Gymnasium.

Turle, James, b. March 5, 1802, Somerton, d. June 28, 1882, London, chorister of Wells Cathedral, organist of St. Jame's, Bermondsey, 1829, assistant organist, then organist (1831) Westminster Abbey, retiring in 1875. T. possessed an unusually large hand, enabling him to stretch a twelfth almost as easily as ordinary players do octaves. His brother Robert became organist of Armagh Cathedral, and a William Turle (first cousin) was chiefly active in Taunton.

Turpin, Edmund Hart, Mus. Doc., b. May 4, 1835, Nottingham, organist of St. George's, Bloomsbury, then of St. Bride's, Fleet Street. Hon. Sec. Royal College of Organists, Warden of Trinity College, London, and well-known as a recitalist.

Vilbac, Renard de, b. June 3, 1829, Montpelier, d.

March 19, 1884, Paris, organist of St. Eugène, Paris, 1856, won the Grand Prix de Rome in 1844.

Vogler, George Joseph (the Abbé), b. June 15, 1749, Würzburg, d. May 6, 1814, Darmstadt; one of the most curious personalities in musical history; both genius and charlatan. He was famous as an extempore player and his performances in the strict style excited the astonishment of such a competent judge as Rinck; yet he carried the idea of "programme music" to absurd lengths; we read of organ pieces describing the "drowning of an Archduke", a "Hottentot melody on three notes", the "Last Judgment according to Rubens" (!), the "Fall of the Walls of Jericho", etc. He travelled much, his playing everywhere exciting great curiosity and interest; at Amsterdam in 1785 no less than 7000 tickets were sold for an organ recital. Weber was one of his pupils. His reforms in organ construction have been noticed on page 9.

Walmisley, Thomas Forbes, b. 1783, London, d. there, July 23, 1866, composer of glees, organist of St. Martin-in-the-Fields, 1810. His son,

Walmisley, Thomas Attwood, Mus. Doc. Cantab., b. Jan. 21, 1814, London, d. Jan. 17, 1856, Hastings, organist Croydon Church, 1830, Trinity and St. John's Colleges, Cambridge, 1833. His Sunday work there (partly as deputy) deserves mention:— St. John's, 7. 15. a. m.; Trinity, 8; King's, 9. 30.; St. Mary's, 10. 30. and 2.; King's 3. 15.; St. John's, 5.; Trinity, 6. 15.! In 1836 he succeeded Dr. Clarke Whitfeld as Professor of Music to the University of Cambridge; composer of church music, odes, and lecturer of repute, as well as one of the finest players of his period.

Warman, John Watson, b. Aug. 12, 1842, Canterbury, of French descent; articled to an organ builder there, after various organ appointments he was elected organist of Quebec Cathedral; returned to England, worked for some months in Messrs. Hill's organ factory in order to obtain practical information for a work on organ building; chiefly known as a writer.

Warren, Samuel P., b. Feb. 18, 1841, Montreal, pupil of Haupt in Berlin; settled in New York in 1865, became organist of Grace Church; one of the foremost American players.

Wermann, Friedrich Oscar, b. April 30, 1840, Saxony,

Capellmeister of the Kreuzkirche, Dresden (interior destroyed by fire Feb. 1897, after recent restoration; the bells, music library and organ, which had just been rebuilt, being consumed). W. has written organ sonatas and some effective pieces for organ and violin, and organ and 'cello, which deserve mention.

Wesley, Samuel, b. Feb. 24, 1766, Bristol, d. Oct. 11, 1837, London, the finest English organist of his day, and a zealous enthusiast for Bach, to which his many fine church motetts and organ fugues bear witness. His brother Charles was also an excellent player, and held various appointments in London.

Wesley, Samuel Sebastian, Mus. Doc. Oxon., b. Aug. 14, 1810, d. April 19, 1876, Gloucester; chorister of the Chapel Royal, St. James's; organist in 1827 of St. James's, Hampstead Road, of St. Giles's, Camberwell, St. John's, Waterloo Road, and of Hampton-on-Thames, holding these four posts simultaneously. In 1832 he was appointed organist of Hereford Cathedral, in 1835 of Exeter Cathedral, 1842 Leeds Parish Church, in 1865 Gloucester Cathedral. Dr. Wesley was one of our most gifted players, and his many noble anthems testify to a rare dignity and beauty of style. His genius was by no means understood or appreciated by the cathedral staff of his time, and his unceasing endeavours to introduce much-needed reforms were frustrated by the apathy of routine or actual opposition. His organ compositions, written for a G organ, have been republished and adapted to the present pedal compass. Wesley was an advocate of the old "unequal temperament" system of tuning, an unaccountable preference, as its retention would have made many of the surprisingly beautiful modulations into remote keys which abound in his works quite intolerable. Equally unaccountable is the actual rejection, at a competition, of his anthem "The Wilderness", — one of the glories of the English Church School, — and that, too, by no less an authority than Dr. Crotch. His compositions, however, excited Spohr's admiration, and whilst at Gloucester, he received a somewhat tardy State recognition in the form of a Civil List pension of £100 a year for his services to Church music.

Westbrook, William Joseph, Mus. Doc. Cantab., b. Jan. 1, 1831, London, d. 1894. Organist of St. Bartholomew's, Bethnal Green, and in 1851, St. Bartholomew's,

Sydenham; sub-organist, Crystal Palace for a few years; conductor South Norwood Musical Society; teacher, composer and organ arranger.

Whiting, George Elbridge, b. Sept. 14, 1843, near Boston U. S. A., studied with G. W. Morgan in New York, Best in Liverpool, and Haupt and Radecke in Berlin, has held various organ appointments in Hartford, Boston and Albany. In 1879 professor of organ playing Cincinnati Conservatory, returned to Boston, 1882; American composer of organ music and various large orchestral and choral works.

Widor, Charles Marie, b. Feb. 24, 1845, Lyons, studied under Lemmens, Fétis and Rossini in Brussels and Paris, became organist of St. François, Lyons, made a reputation as an expert; in 1869 appointed organist of St. Sulpice, Paris; visited England in 1888 to conduct his "Walpurgis Night" music at a Philharmonic concert. M. Widor possesses an exceptional technique, and is also an accomplished pianist. His elaborate organ symphonies testify to his high aims as a composer; they also rank amongst the most difficult pieces in organ literature.

Williams, Charles Lee, Mus. Bac., b. 1853, Winchester; organist Llandaff Cathedral and Gloucester Cathedral, resigning the latter 1897, on account of ill-health; composer of cantatas and church music.

Willing, Christopher Edwin, b. Feb. 28, 1830, Devon, organist of the Foundling Hospital for many years.

Worgan, John, Mus. Doc., b. 1724, London, d. Aug. 24, 1790, London, organist and composer of church music.

PART VII.

Guide Through Organ Literature.

Methods and Studies.

Best, W. T. Art of Organ playing.

Part 1 consists of exercises for the manuals alone, Part 2 contains numerous extracts illustrating special technical difficulties, from the organ works of Bach, Mendelssohn, etc.

Gladstone, F. E. The Organ Students' Guide. (8768).

This work assumes a moderate degree of proficiency in piano playing. Its conciseness (39 pp.) requires that the exercises should be supplemented at various stages by the teacher.

Lemmens, N. J. Organ School.

Merkel, G. Op. 177. Organ School.

— Op. 182. 30 Studies in Pedal Technique.

Both are published with English text. Op. 182 forms a supplement to Op. 177.

Rinck, J. C. H. Organ School (9545 a—f) 6 Bks.

Beginning with 2-part exercises for the manuals, Rinck's School is one of the most comprehensive of those here enumerated.

Scotson Clark. First Steps in Organ Playing. (8750).

Intended for those who begin the organ with but little previous acquaintance with the piano. Part 2 consists of a selection of pieces light in style.

As additional studies, a selection from the following list of easy and moderately difficult pieces is recommended:—

André, J. Op. 65 and 67. Voluntaries. (8737 a, b).

Bach, J. S. 8 Short Preludes and Fugues. (W. T. Best). (9807).

— 50 Short Choral Preludes. (W. T. Best). (9817).

Chipp, E. T. 3 Studies. (8741).

Hesse, A. F. Organ Music. (F. E. Gladstone). (8746).

Merkel, G. Op. 36. 36 Short and Easy Preludes.

— Op. 37. 10 Fughettas. (Peters Ed. 2821).

— Op. 134. 10 Preludes and Postludes.

— Op. 171. 30 Short Preludes.

— Op. 179. 16 Organ Pieces.

Methods and Studies. (Continued.)

Rembt. Fughettas. (Peters Ed. 2509).*Rheinberger, J.* Op. 49. 10 Trios. (2 Bks.).*Rinck, J. C. H.* Organ Works. (Gladstone). (8773).

Contains 50 short and easy Preludes, followed by 10 Postludes.

Smart, H. 12 Short and Easy Pieces. (3 Bks.).

— 12 Short Interludes.

— 2 Trios.

Original Organ Music.

Step 1.

Batiste, E. "Angelic Voices." Two Andantes.

— Andantino in E minor.

Benoist, F. Marche Religieuse. (Cecilia; 8713).*Bervon, I.* Op. 2. 12 Voluntaries. (2 Bks.).*Best, W. T.* Andante in C. (Cecilia; 5846).*Boely, A. P. F.* Interlude. (Cecilia; 8707).*Capocci, F.* Pezzi Originali. 10 Bks. (8742 a—k).

Each book contains five pieces, belonging chiefly to this Step and the next.

— Select Organ Compositions (from the "Pezzi Originali"): --

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|----------------------------|-------------------------------|
| 1. Offertorio in G. | 8. Gran Coro Trionfale in E♭. |
| 2. Solo di Flauto in B♭. | 9. Preghiera in A♭. |
| 3. Meditazione in E minor. | 10. Marcia in F. |
| 4. Larghetto in G. | 12. Offertorio in C. |
| 5. Finale in F. | 15. Cantabile in C. |
| 6. Scherzo in D. | 16. Finale in G. |

Clark, Scotson. Organ Works. 3 Bks. (8753 a, b, c).

Containing marches and other pieces of a light character:—

Vol. 1. Fifteen Marches. — 1. Marche Anglaise; 2. Marche aux Flambeaux; 3. Marche des Fantômes; 4. Marche des Girondins; 5. Marche des Jacobins; 6. Marche militaire; 7. Belgian March; 8. Commemoration March; 9. Festal March; 10. Inauguration March; 11. Pilgrims' March; 12. Procession March; 13. Roman March; 14. Russian March; 15. Vienna March.

Vol. 2. 25 Pieces (Voluntaries, Offertories, Melodies, Communion, Improvisations, Fantasias, etc.).

Vol. 3. 23 Pieces (Voluntaries, Pastorales, Andantes, Melodies, Communion, Offertories, Improvisations, Fantasias, etc.).

The following pieces are obtainable separately: —

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|----------------------------|-----------------------------|
| 1. Opening Voluntary in G. | 6. Melody in A. |
| 2. Pastorale in C. | 7. Postlude in B♭. |
| 4. Andante in F. | 8. Communion, D min. and F. |
| 5. Melody in D. | 21. 3 Improvisations. |

Original Organ Music. Step 1. (Continued.)

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| 22. Ave Maria. | 41. Andante con moto in A. |
| 24. Improvisation in B \flat . | 42. Communion in D min. and A. |
| 34. Communion in C minor. | 43. Offertoire in C. |
| 37. Communion in F. | 45. Improvisation in C. |
| 39. Romanza in B \flat . | 47. Improvisation in F. |

Delbruck, G. Berceuse in A.

Dubois, T. Andante in B \flat . (Cecilia; 8711).

Duncan, Edmondstoune. Six Church Pieces. (Cecilia; 5849).

Gladstone, F. E. Organ Music for Church use (8769).

The following pieces are obtainable separately:—

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|----------------|-------------------------------|
| 1. Andantino. | 7. March. |
| 3. Postlude. | 8. Two Melodies. |
| 6. Allegretto. | 9. Introduction and Fughetta. |

Gounod, C. Marche Romaine.

Guilmant, A. The Practical Organist. (9 Bks.).

These are, for the most part, easier than the other set of "Pieces in different styles".

— Communion in G. (Bk. 15, No. 1).

— Postlude in F.

Hesse, A. 12 Melodious and Easy Pieces. (Cecilia; 5851).

Méhul, A. Daussoigné. Andante in A \flat . (Cecilia; 8724).

Merkel, G. Op. 152, No. 2. Andantino in A minor.

— Pastorale in F; No. 2 of Six Pieces.

— Andante in F; No. 4 of Six Pieces.

— Op. 144, No. 1. Andantino in E \flat .

Niedermeyer. Prelude in D. (Cecilia; 8732).

Paladilhe. Andante cantabile in A. (Cecilia; 8722).

Rembt, J. E. 12 Easy Preludes in Trio form.

Salomé, T. Cantilène; Andante espressivo in A minor. (No. 9 of 10 Pieces).

Smart, H. 2 Easy Preludes.

— 50 Preludes and Interludes.

— 6 Short and Easy Pieces. (3 Bks.).

Steane, Bruce. Meditation in E. (Mag. of Voluntaries, No. 4).

Thomas, A. Prière in F. (Cecilia; 8717).

Tours, B. Allegretto grazioso in D.

Vilbac, R. de. Andante cantabile. (Cecilia; 8734).

Volckmar, W. Op. 66. 100 Short and Easy Pieces (in one book).

Wely, Lefébure. Andante in G (Communion). (Cecilia; 8732).

Original Organ Music. Step 1. (Continued.)

Wély, Lefebvre. Elégie in F minor. (Cecilia; 8735).

— Andantino in G min. (Cecilia; 8713).

— Andante in D \flat . (Prière). (Cecilia; 8713).

Zipoli, D. Elevazione and Offertorio. (Cecilia; 5842).

Step 2.

Bach, J. S. Organ Works, edited by W. T. Best:—

Vol. VI. Fugues, Alla Breve, Canzona, and Fantasias
(9806); or singly:—

Fugue in G minor (9846).

Fugue in C minor (9847).

Fugue in B minor (9848).

Fugue in C minor (9849).

Alla Breve in D major (9850).

Canzona in D minor (9851).

Fantasia in C minor (9852).

Fantasia in G major (9853).

Vol. VII. Eight short Preludes and Fugues (9807); or
singly:—

No. 1 in C major; 2, in D minor; 3, in E
minor; 4, in F major (9854).

No. 5 in G major; 6, in G minor; 7, in A
minor; 8, in B flat major (9855).

(See also under *Bach*, Step 3.)

Bach's organ music is, of course, quite indispensable to every organist. Exceptionally large and clear type on good paper, and careful editing, combine to make Best's edition one to be specially recommended. Fingering and pedal marks in difficult passages, hints as to registration and changes of manual, with foot-notes explanatory of various species of turn or mordent have been thoughtfully provided by the editor. In the above volumes will be found many of the easier pieces; the "Great" Preludes and Fugues, Toccatas, etc., being classified under Step 3.

Batiste, E. Four Andantes.

— "Voix Celestes", Andante in G.

— Offertoires in A, A \flat , D and G.

— Andante Sostenuto in F.

Benoist, F. Prière. (Cecilia; 8710).

Buck, Dudley. "At Evening". Idyll.

Capocci, F. Select Organ Compositions (from the "Pezzi Originali"):—

No. 11. Finale in G.

No. 17. Melodia in B.

No. 13. Invocazione in E.

No. 18. Minuetto in B.

No. 14. Capriccio in B.

Original Organ Music. Step 2. (Continued.)

Clark, Scotson. "Chorus of Angels".

— Melody in F.

— Improvisation in G (Original Pieces, No. 48).

Claussmann, A. Minuetto in F. Bk. 5, No. 2.

Cooper, J. T. Sonata Ecclesia.

Dubois, T. Prelude in C. (No. 1 of 12 Pieces).

— Grand Choeur in B \flat . (No. 12 of 12 Pieces).

Eberlin, G. E. Fugue in F. (Cecilia; 5856).

Franck, C. Andantino in G minor.

Fumagalli, P. Sonata in D. (Cecilia; 8733).

— Sonata in E minor. (Cecilia; 5844).

Gigout, E. Marche Religieuse in E \flat . (No. 3 of 6 Pieces).

Gladstone, F. E. Original Pieces for the Organ:—

2. Posilude.

11. Andante con moto.

4. In modo di Minuetto.

12. Postlude (Tempo di minuetto).

5. Allegro moderato.

10. Prelude and Fugue.

Gounod, C. Marche Religieuse in C.

Grisson, J. Op. 11. Communion in F.

Guilmant, A. Marche triomphale in E \flat .

— Melody in A \flat . (Bk. 3).

— Allegretto in B minor. (Bk. 5).

— Andante con moto in E. (Bk. 2).

Harwood, B. Andante in D.

Hesse, A. Toccata in A. (Cecilia; 8708).

Hollins, A. Andante in D ("Recital Series", No. 7.)

Hopkins, E. J. Adagio Cantabile in D.

Krebs, J. L. Fugue in C. (Cecilia; 5838).

— 4 Pieces (Fantasia, Concert Fugue, Prelude on a Choral, and Fugue.) (Cecilia; 5847).

Lemare, E. H. Romance in D \flat . (No. 4 of "Recital Series").

— Pastorale in E.

Lemmens, J. N. Prière in E. (No. 3, Morceaux choisis).

— Marche Triomphale in D. (No. 13, Morceaux choisis).

— Allegretto in B \flat .

Lloyd, C. H. Andante in A.

— Minuet in A.

Mailly, A. Marche Solenelle. (Cecilia; 8721).

— Meditation and "Pâques fleuries". (Cecilia; 8716).

Merkel, G. Pastorale in G.

— Op. 39, No. 3. Canon.

Original Organ Music. Step 2. (Continued.)

- Merkel, G.* Op. 117. Adagio, Allegretto and Trio.
 — Op. 122, No. 2. Andante in A minor.
 — Op. 133. Fantasia in E minor.
Munro, D. R. Orchestral March.
 — Caprice in G minor.
Perelli, E. Marcia Religiosa. (Cecilia; 8706).
Petralli, V. A. Offertorio in F. (Cecilia; 8726).
Rea, W. 3 Organ Pieces. (8771).
Rheinberger, J. Op. 27. Sonata in C minor. (Cecilia; 8703).
 — Op. 65. Fantasia Sonata in A \flat . (Cecilia; 8701).
 — Fugue in F minor. (Cecilia; 8723).
 — Op. 156. 12 Characteristic Pieces.
 — Op. 167. 12 Meditations.
 — Op. 162. 12 Monologues. (2 Bks.).
 — Op. 174. Miscellaneen, 12 Pieces. (2 Bks.).
Salome, T. Grand Choeur in A.
Silas, E. Op. 95, No. 1. Andante non troppo in G minor.
 — Op. 95, No. 2. March in B \flat .
 — Op. 95, No. 5. Meditation in a Cathedral.
 — Op. 114. Meditation in an old Gothic Church.
Smart, Henry. Andante No. 1 in G; No. 2 in A; No. 3 in E minor.
 — Prelude in E \flat ; Introductory Voluntary in B \flat , and Andante grazioso in G.
 — March in G.
 — 3 Andantes in C, F and A.
 — Andante in A (Posthumous work). (Cecilia; 8727).
Spinney, W. Nocturne, "Songs in the Night".
Stephens, C. H. Op. 3. Adagio non troppo and Andante Pastorale.
Tours, B. Minuet and Trio in G.
 — Fantasia in C.
Turpin, E. H. Allegro in C. (Postlude).
Wély, Lefébure. Offertoires. No. 1 in B \flat ; No. 2 in F; No. 3 in C; No. 4 in G; No. 5 in A; No. 6 in C minor. (9540 a—f).
 — Offertoire in F. (No. 1, Modern Organist).
 — Andantes in A \flat and G. (Cecilia; 8732).
Wesley, S. Andante in F. (Cecilia; 5840).
 — Prelude and Fugue in C minor. (Cecilia; 5838).
 — Fugue in F. (Cecilia; 5846).

Original Organ Music. Step 2. (Continued.)

Wesley, Dr. S. S. Air varied. (Holsworthy Church Bells).

— Air varied in F \sharp minor.

Wolstenholme, W. Canzona in B \flat . (No. 2 of Recital Series).

Step 3.

Andrée, E. Organ Symphony. (Cecilia; 5843).

Bach, J. S. Organ Works, edited by W. T. Best: —

Vol. I. 6 Preludes and Fugues (9801).

or singly:—

No. 1, in C major (9821).

2, in G minor (9822).

3, in D major (9823).

4, in E minor (9824).*

5, in F minor (9825).

6, in G major (9826).

Vol. II. 6 Preludes and Fugues (9802).

or singly:—

No. 7, in C major (9827).

8, in A minor (9828).

9, in D minor (9829).*

10, in G major (9830).

11, in C minor (9831).

12, in E flat major (9832).

(sometimes called "St. Ann's Fugue").

Vol. III. 6 Preludes and Fugues (9803).

or singly:—

No. 13, in C major (9833).

14, in C minor (9834).

15, in A major (9835).

16, in B minor (9836).

17, in C minor (9837).

18, in E minor (9838).

Vol. IV. Fantasia, Toccatas and Fugues (9804).

or singly:—

Fantasia and Fugue in G minor (9839).

Toccata and Fugue in D minor (9840).

Toccata and Fugue in E major (9841).

Toccata and Fugue in C major (9842).

* These numbers might be taken by students who have arrived at Step 2.

Original Organ Music. Step 3. (Continued.)

Vol. V. Toccatas, Fugues and Passacaglia (9805).

or singly:—

Toccata and Fugue in F major (9843).

Toccata and Fugue in D minor (9844).

Passacaglia in C minor (9845).

Vol. VIII. Six Sonatas for two Claviers and Pedal (9808).

or singly:—

No. 1, in E flat major (9856).

2, in C minor (9857).

3, in D minor (9858).

4, in E minor (9859).

5, in C major (9860).

6, in G major (9861).

Vol. IX. Preludes, Fugues, Fantasia, &c. (9809).

Prelude and Fugue, A minor (9862).

Fugue, G major (9863).*

Prelude, A minor (9864).

Fantasia, G major (9865).*

Fantasia and Fugue, A minor (9866).

Fantasia with Imitation, B minor } (9867).*

Fantasia, C major

Prelude, G major } (9868).*

Fugue, G major }

Pastorale, F major (9869).*

Prelude, C major } (9870).

Trio, D minor }

Vol. X. Four Concertos (9810).

No. 1, in G major.

2, in A minor.

3, in C major.

4, in C major.

Vol. XI. The Great Choral-Preludes (9811).

No. 1. Komm, heiliger Geist.

2. O Lamm Gottes unschuldig.

3. Christ, unser Herr, zum Jordan kam.

4. Nun danket alle Gott.

5. Schmücke dich, o liebe Seele.

6. Allein Gott in der Höh sei Ehr'.

Vol. XII. The Great Choral-Preludes (9812).

No. 7. Wir glauben all' an einen Gott, Schöpfer
(sometimes called "The Giant's Fugue"). (9871).

8. Komm, heiliger Geist.

9. Nun komm', der Heiden Heiland.

* See foot-note, page 183.

Original Organ Music. Step 3. (Continued.)

10. Komm Gott, Schöpfer.
11. Wir glauben all' an einen Gott, Vater.
12. Allein Gott in der Höh' sei Ehr'.

Vol. XIII. The Great Choral-Preludes (9813).

- No. 13. Von Gott will ich nicht lassen.
14. Wenn wir in höchsten Nöthen sind.
15. Herr Jesu Christ, dich zu uns wend.
16. Nun komm', der Heiden Heiland.
17. Valet will ich dir geben.
18. Dies sind die heil'gen zehn Gebot'.

Vol. XIV. The Great Choral-Preludes (9814).

- No. 19. An Wasserflüssen Babylon.
20. Valet will ich dir geben.
21. Aus tiefer Noth schrei' ich zu dir.
22. Allein Gott in der Höh' sei Ehr'.
23. Jesus Christus, unser Heiland.
24. Vater unser im Himmelreich.

Vol. XV. The Great Choral-Preludes (9815).

- No. 25. Allein Gott in der Höh' sei Ehr'.
26. Jesus Christus, unser Heiland.
27. Christ lag in Todesbanden.
28. Wie schön leuchtet der Morgenstern.
29. Wo soll ich fliehen hin.
30. An Wasserflüssen Babylon.

Vol. XVI. The Great Choral-Preludes. (9816).

- No. 31. Ein' feste Burg ist unser Gott.
32. Wo soll ich fliehen hin.
33. Nun komm', der Heiden Heiland.
34. Kommst Du nun, Jesu vom Himmel herunter.
35. Wer nur den lieben Gott lässt walten.
36. Gott der Vater, wohn' uns bei.
37. Kyrie, Gott Vater in Ewigkeit.
38. Christe aller Welt Trost.
39. Kyrie, Gott, Heiliger Geist.

Barnett, J. F. Offertoire in G.

Batiste, E. Offertoire in C minor.

— Offertoire in F minor.

Berens, H. Fantasia in C minor. (Cecilia; 8722).

Best, W. T. Andante with Variations in F. (Cecilia; 8728).

— Festival Overture in B \flat . (Cecilia; 5854).

— Concert Overture in C. (Cecilia; 5841).

— March for a Church Festival, and Fantasia in F. (Organ Pieces, Bk. 2).

Original Organ Music. Step 3. (Continued.)

Best, W. T. Sonata in D minor. (Cecilia; 8729).

— 12 Short Preludes on English Psalm Tunes. (Cecilia; 8715).

— Allegro festivo in E \flat , and Allegretto in B \flat . (Cecilia; 5850).

— Four Concert Fantasias:—

No. 1. Paraphrase on the Prayer "Giusto Ciel'."

2. Fantasia on a Welsh March.

3. Fantasia on an air by Rode.

4. Marcia Eroica and Finale.

Brosig, M. Fantasia in A \flat . (Cecilia; 8725).

Capocci, F. Terza Sonata. (8745).

Chipp, E. T. 4 Organ Pieces. (Cecilia; 8714).

Drifffield, E. T. Air with Variations in B minor. (Cecilia; 5853).

Dubois, T. Toccata in G. (No. 3 of 12 Pieces).

Fisher, H. Fantasia and Fugue on "Ein' feste Burg".

Freyer, A. Concert Fantasia in F minor. (Cecilia; 8730).

Gade, N. 3 Pieces. (Cecilia; 8704).

Gladstone, Dr. F. E. Air with Variations in F.

— Sonata in A minor.

Guilmant, A. Marche Religieuse in F. (Bk. 1).

— Cantilène Pastorale in B minor. (Bk. 1).

— Grand Choeur in D. (Bk. 4).

— Tempo di Minuetto. (Bk. 12).

— Grand Choeur in E \flat . (Bk. 10).

Heap, C. S. Fantasia in A. (Cecilia; 8720).

Hesse, A. Variations on an original Theme in A. (Cecilia; 5837).

— Variations on an original Theme in A \flat . (Cecilia; 5836).

Hollins, A. Concert Overture in C.

Hopkins, E. J. Allegro moderato in A.

Jordan, Warwick. Prelude and Fugue in E minor. (5806).

Lemmens, J. N. Grand Fantasia, "The Storm".

Lloyd, C. H. Sonata in D minor.

Lott, E. M. Scène Pastorale.

Lux, F. Op. 29. Fantasia on "O Sanctissima".

(The melody here treated is that known in England as the hymn tune "Sicilian Mariners".)

Mac Master, G. Grand Choeur in D.

Mailly, A. Op. 1. Sonata in D minor.

Mendelssohn. Op. 37. 3 Preludes and Fugues. (9541).

Original Organ music. Step 3. (Continued.)

Mendelssohn. Op. 65. 6 Sonatas. (9542).

Mendelssohn's organ works are as indispensable as those of Bach to every organist. Of the Preludes and Fugues, the 2nd in G is the easiest and also the one most frequently heard in public. Of the Sonatas, No. 2, in C minor, and No. 3, in A, may be studied first. No. 1 in F minor is one of the most difficult, and also one of the finest. All are, as Professor Faisst remarks, "epoch making" in the history of organ music.

Merkel, G. Op. 35. Adagio in E. (Cecilia; 8706).

— Op. 103. Pastorale in G.

— Op. 104. Fantasia and Fugue in A minor.

— Op. 122, No. 1. Andante in A \flat .

— Op. 152, No. 1. Adagio in A \flat .

— Op. 42, 2nd Sonata in G minor; Op. 80, 3rd Sonata in C minor.

— Op. 115, 4th Sonata in F minor; Op. 118, 5th Sonata in D minor.

— Op. 137. 6th Choral Sonata in E minor.

— Op. 140. 7th Sonata in A minor; Op. 178, 8th in B minor (with Passacaglia).

— Op. 183. 9th Sonata in C minor. (Last work.)

The sonatas of Merkel and Rheinberger are the most important German contributions to organ literature since Mendelssohn's. Merkel's 1st Sonata was written as an organ duet, but can be obtained arranged as a solo sonata. Of the other eight, the 3rd is the least important, the 2nd is more frequently heard in Germany than in England; the 4th, 5th, and 6th, are specially interesting. All contain slow movements of much beauty; the fugues are written with a master hand, and a dignified style appropriate to the organ is always maintained.

Morandi, E. Overture in E minor.

Noble, T. T. Theme with variations. (5816).

Prout, E. Op. 4. Sonata in D.

Raff, J. Introduction and Fugue in E minor. (8702).

Reger, Max. Op. 7. 3 Organ Pieces. (5825).

Renzi, R. 1st Organ Sonata in A minor. (5845).

Rheinberger, J. Op. 88. 3rd Sonata (Pastoral) in G.

Op. 98. 4th Sonata in A minor. Op. 111. 5th Sonata

in F \sharp min. Op. 119. 6th Sonata in E \flat min. Op. 127.

7th Sonata in F min. Op. 132. 8th Sonata in E min.

Op. 146. 10th Sonata in B min. Op. 148. 11th Sonata

in D min. Op. 154. 12th Sonata in D \flat maj. Op. 161.

13th Sonata in E \flat maj. Op. 165. 14th Sonata in C

Original Organ Music. Step 3. (Continued.)

maj. Op. 168. 15th Sonata in D maj. Op. 175. 16th Sonata in G \sharp min. Op. 181. 17th in B maj.

"Rheinberger, a master of form, stands at the head of the living organ composers who persevere in classic paths. If a few movements, for instance, of the earlier period, show a certain dryness, yet by far the larger number are of considerable importance. With regard to intrinsic value, the captivating qualities of each, and the technical dexterity required, there is, generally speaking, a gradation from I. to XII. which in the master-works Op. 142 and 148 reaches a climax." — *Führer durch die Orgel-Literatur*, by Kothe and Forchhammer, 1890.

Rinck, C. H. Flute Concerto.

Schneider, J. Fantasia and Fugue in C minor. (Cecilia; 8735).

Smart, H. Con moto in B \flat .

— Con moto moderato in D minor.

— Fantasia with Chorale in G.

— Postludes in C, D, and E \flat .

— Festive March in D.

— Grand Solemn March in E \flat .

— Choral with Variations in E \flat .

— Air with Variations in A.

Henry Smart's organ works are in number and quality the most valuable in English organ literature. The pieces above enumerated have obtained a widespread and well deserved popularity.

Stewart, Sir R. P. Concert Fantasia in D minor.

Töpfer, J. G. Fugues in B \flat and D. (Cecilia; 8707).

— Fugue in E minor. (Cecilia; 8712).

Wely, Lefébure. March in E \flat .

Wesley, Samuel. Fugue in G major. (Cecilia; 5839).

— Prelude and Fugue in A major. (Cecilia; 8731).

— Prelude and Fugue in D major. (Cecilia; 5852).

— Fugue in C. (Cecilia; 8719).

These interesting reprints of the great Bach enthusiast's compositions deserve to become more widely known.

Wesley, Dr. S. S. Andante in E \flat . ($\frac{2}{4}$ time).

— Andante in E. ($\frac{4}{4}$ time).

— Andante in F.

— Choral Song and Fugue.

Originally published for a G organ, the above, — a few of the best pieces of one of our greatest English players and composers, — form part of a set of ten pieces, edited by Dr. Garrett for a C organ.

Original Organ Music. Step 4.

Step 4.

- Best, W. T.* Fantasia and Fugue in E minor. (Cecilia; 8705).
 — Scherzo in A minor. (Cecilia; 8709).
Guilmant, A. Sonata No. 1 in D minor; No. 6 in C.
 — Caprice in B \flat . (Bk. 6).
Liszt, F. Prelude and Fugue on the name of Bach.
Lux, F. Concert Variations on the "Harmonious Blacksmith".
Merkel, G. Op. 45. Variations on a Theme of Beethoven.
Reger, Max. Op. 16. Suite in E minor. (5826).
Rheinberger, J. Op. 142. Sonata No. 9, in B \flat minor.
Saint Saëns, C. Fantasia in E \flat .
Thiele, L. Theme with Variations in A \flat .
 — Concert piece No. 1, in C.
Widor, C. M. Symphony No. 2 in D (Scherzo and Finale).
 — Symphony No. 5 in F (with Toccata).
 — Symphony No. 6 in G; No. 7 in A; No. 8 in B.

 Arrangements for the Organ.

Step 1.

- Beethoven.* Adagio (Sestet, Op. 81), arr. by Stone.
Bennett, W. S. "God is a Spirit," quartet, arr. by Garrett.
Chauvet, A. Andantino "Les Cloches de Soir," arr. by Guilmant.
Cherubini. "Ave Maria" and "O Salutaris," arr. by Wodehouse.
Clark, Scotson. Gavotte Française.
 — Gavotte de la Dauphine.
Dorn, E. Grande Marche Imperiale.
Gade, N. Romanza (Aquarellen), arr. by Prout.
Gounod, C. "From Thy love as a Father" (*Redemption*), arr. by Martin.
Handel. 12 Airs from the Oratorios, arr. by Scotson Clark. (8752).
 — Largo in G.
Handel Album, 2 vols., (6757 and 6758), arr. by Best.
 A number of the shorter pieces in these two volumes would prove useful at this stage. See next Step.

Arrangements for the Organ. Step 1. (Continued.)

Haydn, J. Chorus, "Come, gentle Spring," (*Seasons*), arr. by Hopkins.

Heller, S. Op. 81. "Chant de Berceau" (Bk. 1, Short Pieces) arr. by Spark.

Henselt, A. Romance in B. (5811a).

— Romance in B minor, arr. by Westbrook.

Liszt, F. Ave Maria d'Arcadelt.

Mendelssohn. 6 Airs from the *Elijah*, arr. by Calkin.

— 3 Airs from the *Elijah*, arr. by Calkin.

— Air and Chorus, "O for the wings," arr. by Cooper.

— Air and Chorus, "I waited for the Lord," arr. by Wodehouse.

— "O Quam Suavis."

Mendelssohn. Arioso, "But the Lord is mindful" (*St. Paul*), arr. by Westbrook.

— Trio and Chorus, "Beati Omnes," arr. by Westbrook.

— Quartet and Chorus, "Surrexit Pastor," arr. by Westbrook.

Reinecke, C. Entr'acte, *King Manfred*, arr. by Prout.

Scarlatti, D. Pastorale in F, arr. by Best. (Cecilia; 5855).

Schumann, R. "Träumerei". (5811a).

— "Dir, der Unberührbaren," (*Faust*), arr. by Prout.

Spoehr, L. Andantino in B \flat , arr. by Archer.

Volkmann, R. "Song of the Hero," arr. by Westbrook.

Step 2.

Ancient and Modern Fugues, by John Bennett, Dupuis, Eberlin, Frescobaldi, etc. 3 vols., arr. by Westbrook. (9791, a—c).

Ascher, J. Op. 54. "Les Contemplations," arr. by Westbrook.

Bach, J. S. "My heart ever faithful."

— Aria, "Qui sedes" (Mass in B minor), arr. by Prout.

— Aria, "Schlage doch, gewünschte Stunde," arr. by Prout.

— Chorus "Nun lob', mein' Seel', den Herrn," arr. by Prout.

Beethoven. Andante in F, 1st Symphony, arr. by Wodehouse.

— Hallelujah (*Mount of Olives*), arr. by Stone.

— Larghetto (Violin Concerto), arr. by Banister.

— March and Chorus (*Ruins of Athens*), arr. by Prout.

Bennett, W. S. Serenade (Trio Op. 26), arr. by Tovey.

Arrangements for the Organ. Step 2. (Continued.)

Bennett, W. S. Allegretto Semplice (Op. 17, No. 1), arr. by Fagge.

Best, W. T. Paraphrase on Roeckel's "Air du Dauphin."

Brahms, J. Ave Maria (Op. 12), arr. by Prout.

Carter, T. "Carillons de Dunkerque," transcribed by Turpin.

Clementi. Adagio (Pf. Sonata in G minor, Op. 34, No. 2), arr. by Prout.

Costa, Sir M. March from *Naaman*, arr. by Westbrook.

Dussek. Andante (Pf. Sonata in D, Op. 13, No. 2), arr. by Prout.

Gounod, C. Air, "There is a green hill," arr. by Calkin.

Graun. Choral Fugue (*Der Tod Jesu*), arr. by Prout.

— Choral Fugue (*Te Deum*), arr. by Prout.

Handel Album, 2 vols., 108 pieces, arr. by Best (6757, 6758).

This fine edition is also published in 20 books, each containing about 6 pieces, selected chiefly from the little known Italian operas, marches, Water and Fire Music, sonatas and concertos.

Handel. 12 Movements from the Concertos (separate Nos.), arr. by Wodehouse.

A few Nos. in this excellent selection might be deferred until the next Step is reached.

— 12 Choruses from the Oratorios (in one vol.), arr. by Scotson Clark.

— Chorus, "How excellent" (*Saul*), arr. by Stone.

— Air, "Comfort ye" (*Messiah*), arr. by Stirling.

— Air, "O sleep, why dost thou leave me" (*Semele*), arr. by Prout.

Haydn, J. Poco Adagio (Quartet No. 5, Op. 9), arr. by Westbrook.

— Andante in C ("Surprise" Symphony), arr. by Wodehouse.

— Chorus, "The Heavens are telling" (*Creation*), arr. by Stone.

— Chorus, "Quoniam Tu Solus" (2nd Mass), arr. by Stone.

— Chorus, "The marvellous work" (*Creation*), arr. by Westbrook.

— Largo Cantabile (Symphony in D), arr. by Wodehouse.

— Romanza (La Reine de France), arr. by Wodehouse.

— Andante in G (Symphony in D, No. 7, Salomon set), arr. by Wodehouse.

Arrangements for the Organ. Step 2. (Continued).

Haydn, J. Adagio in D (Symphony in G, Oxford set, Letter Q), arr. by Wodehouse.

Hummel, J. "Quoniam Tu Solus" (3rd Mass), arr. by Hiles.

Kullak. Pastorale in F, arr. by Best.

Lee, Maurice. Gavotte, Louis XV.

— Menuet (Sylvana).

Mackenzie, A. C. Solemn March (*Story of Sayid*), arr. by Martin.

March Album, Bk. 1. 18 Marches by Handel, Mozart, Cherubini, etc;

— Bk. 2. 13 Marches by Beethoven, Weber, Spontini, etc.;

— Bk. 3. 13 Marches by Rossini, Schubert, etc. (8772 a, b, c).

Massenet, J. "Angelus" (Scènes Pittoresques), arr. by Smallwood.

Matthews, J. Short Voluntaries for the Organ. 3 Bks. (5811 a, b, c).

Book 1. — 1, Litany for the Feast of All Souls, Schubert; 2, Romance in B, Henselt; 3, Memorial of the Departed, Hebrew Melody; 4, Träumerei, Schumann.

Book 2. — 1, Andante in A \flat (Sonata Op. 26), Beethoven; 2, Andante in D, Op. 78, Schubert; 3, Adieu, Op. 32, No. 4, Del Valle de Paz; 4, "Blest are the departed," Spohr; 5, Ave Maria, Op. 5, Henselt.

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